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EDITORIAL.

EUROPEAN CHRONICLES.

PLEURO-PNEUMONIA—ITS MICROBE.—From a practical point of view almost anything relative to pleuro-pneumonia can be but of secondary importance to American veterinarians. The scourge has played a sad havoc among our cattle. Through the efforts and masterwork of the Bureau of Animal Industry it has been stamped out of the United States, and through the vigilance of our quarantine officers it will never reënter the country. We read of outbreaks occurring in various parts of Europe now and then, and ask ourselves why don't they follow America's example? But that is all. Practically speaking, the disease has lost its interesting part with us.

It is not so, however, with the scientific problems that remain yet unknown in it, and among those one exists which has attracted the attention of some of the most brilliant men in our profession—that is, the specific agent of the pleuro-pneumonic virus—its separation, its culture. Many have tried to detect it. All have failed. The serosity of the pluero-pneumonic lung contains the virus; but what the germ is no one has succeeded in discovering nor been able to cultivate it, and the most virulent serosity will fail to give the slightest culture *in any of the usual media*, in the air or in vacuum. Although Arloing, Nocard and many others have made numerous attempts in their investigations, their efforts have remained always unsuccessful to this date.

But there are men who never get tired of failures; on the contrary, their courage for investigation is stimulated by them, and Prof. Nocard is certainly one of such men. At last he has succeeded in breaking through the thick mass of difficulties by obtaining cultures of the germ, and that by a process which he has borrowed from the work of Metchnikoff, Roux and Salimbeni, and which consists in cultivating the germ of a contagious disease *in vivo*—that is, by placing in the abdominal cavity of an animal, *a little sac of collodion containing a few cubic centimeters of bouillon in which the virulent substance has been inoculated, and leaving it there for a variable length of time.*

Having recourse to this method, Nocard has succeeded in obtaining cultures of an opaline color, slightly albuminous, containing no cells nor bacteria which could be cultivated in ordinary bouillons, but an immense number of small refringent moving bodies, so minute that their form cannot be exactly determined, even after coloration. These small bodies are living organisms: they are the germs of pleuro-pneumonia. A series of experiments have proved it beyond a doubt.

This is another great discovery attached to the reputation of the learned professor of Alfort, and when, with his usual modesty, he related the facts connected with his successful attempts, there were many among his listeners who predicted for him a name even greater than that of Pasteur. This discovery of the germ of pleuro-pneumonia, by cultivation *in vivo* of the virus, opens up a large field, and certainly now it can be hoped that other germs, which, like that of the bovine scourge, are yet unknown, whose cultures by ordinary processes have always failed, may at an early date be discovered, to be followed by subsequent facts connected with their study, modifications, attenuation, . . . and their serotherapic application can be looked for.*

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ANOTHER CONGRESS OF TUBERCULOSIS.—The fourth session of the Congress for the Study of Human and Animal

* The detailed relation of Professor Nocard's discovery is begun in this issue.

Tuberculosis will be held in Paris between July 27th and August 2d of this year. Among the officers of the permanent committee of organization we find the names of some celebrated veterinarians of Paris, Professors Chauveau and Nocard, Mr. Butel, Leblanc and Rossignot. Among the subjects of interest which will occupy the sittings of the Congress, those which are directly of importance to the veterinarians will be: (1) The struggle against animal tuberculosis by prophylaxy, by Professor Bang, of Copenhagen; (2) contagion of tuberculosis by milk and meat; (3) sterilization of the meat of tuberculous animals.

Veterinarians of all countries can become members of the Congress by sending their application and a payment of 20 francs (four dollars). They will receive a receipt for the same, a title of membership and a copy of the printed transactions. Applications can be sent to Mr. G. Nasson, treasurer of the Congress, 120 Boulevard Saint Germain, Paris.

At this moment, when the subject of tuberculosis is of such importance to many of our colleagues in the United States, we have no doubt that America will be represented, at least nominally, among the members of this Congress.

* * *

A NEW SHOE FOR DRESSING.—This is quite a novelty, answering for all kinds of permanent dressings and for all affections of the sole of the foot. Applied in the ordinary way, it permits the inspection of a wound, the thorough use of antiseptic applications, and by its remaining fixed on the foot, to a certain extent allows a limited amount of use of the animal. It is an ordinary shoe, which has an iron plate, the size of the sole, perfectly adapted to the inside circumference of the shoe. This plate at the back has on each side a small round prolongation, tooth like, which is received in a hole bored in the thickness of each branch of the shoe towards the heels, and thus secured forms a kind of hinge which permits its opening and examination of the sole to be made. Towards the toe, opposite one of the nail holes on each side of the shoe, there is a little

flat projection, which is perforated and resting over the nail hole. A nail driven in holds it in place. It is claimed that this new shoe does away with all other kinds of wood or metallic plates, which, no matter how well applied, are likely to get loose and drop from the foot, thus exposing the dressings and the solar surface to be displaced or injured. While this may be considered here as a new invention, it seems to me that I have already seen something of the same kind due to the ingenuity of some of our American inventors. A. L.

UNITED STATES V. M. ASSOCIATION.

The programme for the approaching meeting at Omaha, as it gradually unfolds, grows in interest, and those in charge of the details are becoming enthusiastic at the prospect of the greatest meeting ever held under its auspices. Reports from various and widely divergent points indicate that the attendance will be large and very national in character, which is one of the most encouraging features of the event, guaranteeing that element in its constituency which has been so ardently sought for by its true friends from its incipiency.

The educational programme especially appeals to its diversified membership, shaping itself by voluntary essayists representing subjects of interest to every phase of membership—from the important and weighty questions of State medicine to the most commonly found diseases of every-day practice, developing through the discussions valuable points to enrich the knowledge of the members on questions where doubt exists and opinions differ.

To the practising veterinarian no department requires greater knowledge, skill, and practice than the domain of surgery. Many operations which have never been attempted by a practitioner are regarded with graver fears than their character warrants, and all they need is an exhibition of the *modus operandi*, when their simplicity is recognized or their manipulation appreciated, and henceforth they successfully undertake them. This especially appeals to the younger members, whose years of ex-

perience are limited. For the most approved methods of performing many of the recognized operations, the association will be favored by surgical clinics conducted by some of the most celebrated American surgeons, illustrating such procedures as securing animals for surgical purposes; demonstrating various methods of producing anæsthesia; castrating the mare and the cryptorchid; arytenoidectomy; median neurectomy; caudal myotomy (straightening, setting up, docking), and a number of operations upon the dental apparatus.

In the section of sanitary medicine, a subject which is rapidly forcing itself upon the profession and public will be brought forward in a systematic and comprehensive manner. Meat inspection is now too thoroughly established nationally to leave any fear that its extension is not to go steadily onward, until every municipality will include in its necessary officers one or more veterinarians entrusted with the important duties of guarding the purity of the animal products consumed by its citizens. For such duties the profession is in duty bound to furnish well-equipped men, and the natural and recognized source of all authority on the questions involved is the National Association, and the occasions for the discussion of the many intricate problems connected with it are at her annual gatherings. In the great West, where the bulk of the meat is prepared for the foreign market, the question is at its perfection, the men of experience in the specialty are there, and no occasion should be so fruitful of good results as the coming meeting in Omaha.

In times gone by, notably a few years ago, many of the members engaged in private practice had good cause to complain that subjects in which they were directly interested were neglected to make room for the discussions upon tuberculosis, pleuro-pneumonia, Texas fever, etc., which were practically endless. There was less cause for complaint at Nashville than at previous meetings, not that sanitary subjects were neglected, but that by holding night sessions, and by a happy dispatch of business, room was made for all the sections. This year there will be many papers of direct interest to those who are the

"physicians" to the sick and the lame, from that frequent and fatal malady among the fast working city horses, acute indigestion, to a consideration of points observed in country practice.

Of not less importance, in many respects, is it imperative to have the annual conclave a source of pleasure to those who journey long distances to engage in the deliberations. One might insist that the sacrifice of time and expense is not necessary, when the excellent report of the proceedings sent out from the Secretary's office, or published in the journals, will give a sufficient conception of the transactions; but with the enjoyments of renewed and formed acquaintances, with delightful social and gastronomic diversions, interspersed with new and enlightening scenes, no report in cold type can supplant the presence of the individual. In another department of the REVIEW will be found the programme of the Entertainment Committee as far as it has been completed, and its contemplation will decide many a member to be present who has hitherto been wondering how he could get away from home.

Every member who possibly can should be present at the next meeting. Let Western veterinarians show to the Eastern that they are glad to have the meeting in their midst, and let those from the Atlantic seaboard demonstrate to their Western brethren that they mean that the U. S. V. M. A. is for all alike by going there in large numbers and joining heads, hands, and hearts in this grand year of stirring liberty.

TO FURTHER ARMY VETERINARY LEGISLATION.

At the May meeting of the Keystone Veterinary Medical Association the neglected condition of the veterinary surgeon in the United States Army was very earnestly taken up, the discussion showing how he was without rank, and without recognition or provision in case of old age or injury; that his social and financial status was subordinate to his worth, education, and position in the outside world, and that in the present crisis, where opportunities for promotion are numerous to other branches of the army, he remained beyond the pale of that

possibility. The members of the Association displayed a commendable spirit in their desire to elevate their military brethren, and to that end a committee to confer with the State Association was appointed, as a result of which the sum of $200 was jointly pledged to defray the expenses of a committee sent to Washington to urge the passage of the Army Bill. We applaud the spirit of our Keystone brethren, and trust their example may bring forth a concerted action all over the country, and that the approaching meeting at Omaha may take up the matter with so much enthusiasm as to be practically irresistible.

ORIGINAL ARTICLES.

THE MICROBE OF PLEURO-PNEUMONIA.

By MM. Nocard and Roux.

With the collaboration of *MM. Borel, Salimbeni* and *Dujardin-Beaumetz.*

Translated by A. Liautard.

The essential lesion of contagious pleuro-pneumonia of cattle consists in the distension of the meshes of the interlobular connective tissue by a large quantity of albuminous, yellowish and limpid serosity.

This serosity is very virulent.

Let us inoculate one drop of it in the subcutaneous cellular tissue of a susceptible cow: after an incubation, never less than eight days, but which may last twenty-five or more, an inflammatory, warm, tense and painful swelling will appear, whose dimensions vary considerably, according to the seat of the inoculation and the subjects inoculated.

If the virulent serosity is deposited under the skin of the trunk or the upper part of the extremities, it promotes, with a severe fever, a large swelling, incrusting rapidly, *often followed by death.* At the autopsy, the meshes of the cellular tissue are found distended by an enormous quantity of yellow and limpid serosity, coagulated here and there into gelatinous masses; the ex-

udation is sometimes so abundant that several liters of virulent serosity can be collected; no matter how extensive, the exudation never extends into the connective lamellæ of the lungs; a little serous exudate may be observed in the pleural sac, but visceral lesions are never found; consequently death is the result of an intoxication.

Some subjects resist; after several days, the swelling, always warm, tense and painful, remains stationary, then diminishes and disappears little by little, without leaving any marks; these subjects are henceforth refractory to the effects of a virulent inoculation and also to those of natural contagion.

This fortunate occurrence is the rule, when inoculation is made far from the trunk, at the end of the tail for instance, where the density of the tissues and the low local temperature does not permit an active germination of the virus. The swelling following inoculation is always similar to that we have described; but it remains limited and disappears by degrees, leaving the animal refractory to natural or experimental contagion.

At times, however, the exudation is so abundant, it promotes such tension upon the aponeurosis, that mortification ensues with sloughing of pieces of the tail, of varying lengths. At others, again, but rarely (once or twice in a hundred), the swelling, instead of remaining confined to the extremity of the tail, ascends rapidly along the organ, and invades the cellular tissue of the croup and of the pelvis; death occurs generally, and the invaded regions at the post-mortem are found infiltrated with large quantities of serosity similar to that of the lung in the natural disease.

Pleuro-pneumonia serosity, so virulent for cattle, is without action for other species. Goats, sheep, dogs, swine, rabbits, guinea-pigs, fowls, resist without injury the subcutaneous or intraperitoneal injections of massive doses of virulent serosity.

These facts were established by Willems in 1850; from these he invented the rules of an efficacious prophylaxy. But this inoculation of Willems, which has been so advantageous, is not without objections. It necessitates the deposit of a drop

of pulmonary serosity in the cellular tissue of the caudal extremity of the animal to be immunized. But this serosity alters with great rapidity; it rapidly becomes putrid and loses its virulency, consequently a fresh lung is necessary for inoculation; ordinarily a pleuro-pneumonic animal is killed at the moment of the operation; but, sometimes the destroyed animal has only an old lesion, where the serous exudate may have lost its virulency or where it may be entirely absent; at times, also, when *essentially preventive* inoculations are to be made, a pleuro-pneumonic cow to be killed cannot always be found.

A real progress was reached when Pasteur taught us how to collect pure serosity from the connective tissue of the pleuro-pneumonic lung and also to obtain large quantities of virulent serosity by the inoculation in a forbidden region of a calf with a drop of pulmonary serosity. Then it became possible to make collections of virus and to distribute them far away, here and there, as it was needed.

Yet the problem was not entirely solved; pleuro-pneumonia serosity, even if gathered pure, loses its virulency somewhat quickly; after one month, six weeks at most, inoculation remains ordinarily without effects. To be sure of being able to supply all demands, centres of production of virus must be established, where every month, at least, fresh subjects shall be inoculated. This is done at great cost in a small number of places.

To determine the specific agent of the pleuro-pneumonic virus, to separate and cultivate it, would constitute, then, an immense progress. Unfortunately all those that have tried—and they form a legion—have failed.

We also have made numerous attempts, and that for a long time. They have always been fruitless. When it has been collected pure, in the perilobular sub-pleural lymphatic sacs, the most virulent pleuro-pneumonic serosity can be inoculated *in all the usual medias*, in air or vacuum, without ever giving culture. Neither can anyone succeed in coloring in them any microbic element with the use of any of the means known.

We had given up all attempts when the paper of MM. Metchnikoff, Roux and Salimbeni, upon the choleric toxine and antitoxine, was published.* The results that they obtained with cultures *in vivo*, in bags of collodion, gave us hope of success. In a few words, the principles and technic of this ingenious method of culture are as follows:

Small bags of collodion with very thin walls are prepared: when sterilized in the thermostat, a few cubic centimeters of bouillon are introduced into them, with a little of the virulent liquid to study; the bags are well closed and then introduced into the peritoneal cavity of a susceptible animal—guinea pig, rabbit, dog, sheep, cow, etc. All these manipulations are quickly learned, and on no occasion does the animal seem to suffer, either from the operation or from the presence of the bags in the peritoneal cavity.

After a varying length of time, from a few days to several months, according to the nature of the microbe that one studies, the animal is killed; the bag is found lodged in some part of the peritoneal cavity, surrounded by a more or less thick envelope of fibrine and cells, or of young fibrous tissue, from which it is easily enucleated.

When the animal of experiment and the liquid of culture have been properly selected, surprising results are obtained, which can, however, be easily interpreted.

The wall of collodion offers an insuperable obstacle to the microbes as well as to the cells; the former cannot get out of the bag, but can multiply in perfect security, because the latter cannot enter it; they are protected against phagocytosis. Besides this, this wall, inaccessible to microbes and cells, is permeable to the liquids as well as to substances in solution; it forms a perfect osmotic membrane; through it exchanges take place which deeply modify the primitive composition of the inclosed liquid; substances elaborated by the microbe can be diffused outside, and when they are sufficiently active or when the animal is sufficiently sensitive, they may produce the death

* *Annales de l' Institut Pasteur*, 1896, p. 257.

of the animal or give rise to more or less serious toxic manifestations, without the invasion of the tissues by one single microbe; at any rate, it is an advantageous condition for culture the microbian auto-intoxication being diminished, if not suppressed; and, again, products from the organism of the subject entering the bag, which may be favorable to the culture of the microbe;—this is the most frequent result; and when the bag is open, the richest culture is generally found.

"This method," say the authors, "is very advantageous to preserve delicate microbes, and succeeds with many species."

Perhaps it would succeed with the pleuro-pneumonic virus? Our suppositions were confirmed.

Bags of collodion, filled with bouillon inoculated with a trace of pleuro-pneumonic serosity, carefully closed and placed in the peritoneal cavity of a rabbit, after 15 or 20 days, contain an opal liquid, slightly cloudy and albuminous. This liquid contains no cells, no bacteria cultivatable in ordinary bouillons. But microscopic examination with a very large power (about 2000 diameters) and a very powerful light, reveals in them a mass of small refringent and motile points of such tenuity that it is impossible, even after coloration, to make out exactly their form. If in the peritoneum of the same rabbit a second collodion bag has also been introduced, containing *identical but not inoculated* bouillon, one can be convinced that the changes of the liquid of the first bag are not due purely and simply to the osmotic exchanges which have taken place through the walls of the bag; as, indeed, the liquid of the second bag, the *witness*, has preserved its primitive transparency and limpidity.

In reality, the motile and refringent points of the inoculated liquid, so numerous that notwithstanding their extremely small size, they made the bouillon opalescent, are living beings which have germinated to infinity, assisted by the changes undergone by the fluid of culture and thanks to the prevention of the phagocytic action by the walls of collodion.

This is proved by inserting in the peritoneum of a sound rabbit two collodion bags, one containing bouillon inoculated

with traces of the opal fluid thus obtained, the other with the same culture, which has been *previously heated;* with this last bag the culture will remain identical with the *witness* bag above mentioned; its contents will remain clear and transparent, while the other one will be opalescent and cloudy, with the numerous refringent points already described; heat had killed the germs of the first one.

With the opal liquid of the fertile bag of the second rabbit, other bags can be inoculated and be placed in the peritoneum of a third rabbit and so on, and always identical results will be obtained. It is wise, however, to use several bags in each passage, as the rupture of a bag is quite common.*

Most ordinarily rabbits have lost much flesh when they are to be killed; sometimes they even die before the day fixed for the autopsy: they are then in a deep state of cachexia, only skin and bones; post-mortem, however, reveals no noticeable organic lesion; the blood and pulp of the parenchymas, inoculated in various media, even in collodion bags, give no culture; then it is, according to all probabilities, an intoxication due to the diffusion, outside of the bag, of the products elaborated by the microbe; at any rate they cannot be attributed to digestive troubles (or others) which would be due to the presence of the bag (foreign body); when the bouillon has not been inoculated rabbits may receive several bags and keep them for months, without showing the least disturbance, without losing one gramme of their weight. It has seemed to us that these accidents were so much more marked and cachexia deeper that the bags, introduced after inoculation were more numerous, of larger dimension or that the culture obtained was richer. Here, then, is a new example of an animal becoming very sensitive to the toxines of a microbe against which, however, he is refractory.

We have tried several times to obtain cultures in bags with

* The bag of collodion can be advantageously replaced by one made with the fine tubular membrane of reed-cane, which according to Metchnikoff offers also an obstacle to the microbes and to the cells, still being permeable to liquids and substances in solution. It is also very strong and resisting.

guinea pigs; we have never succeeded; even after leaving them six weeks in the peritoneal cavity, the bouillon remained as limpid as it was on the first day, no matter how great the quantity of virus it had received.

It is, then, a special microbe, which has grown through successive cultures in the peculiar media created by osmotic exchanges, in the rabbit, within a bag of collodion or of reed-cane.

Is this peculiar microbe the agent of pleuro-pneumonic virulency?

Inoculation allows an affirmative answer.

We proved it by our observation of five cows in which inoculations of a small quantity of culture in bags has given rise to the appearance of the essentially characteristic pleuro-pneumonic swelling.

One of those cows (No. 1) has died with a tremendous œdematous infiltration; the four others resisted. Two of them (Nos. 2 and 3) reinoculated in forbidden region with a large dose (1 c.c.) of pulmonary serosity, have not shown the slightest local or general symptom, while a *susceptible* cow (No. 4) inoculated at the same time, *as a witness*, with 10 drops of the same serosity, died twenty-two days after inoculation. A third cow (No. 5) reinoculated after four months with 1 c.c. of pulmonary serosity from a subacute lesion, has not yet presented any fever nor any local lesion. The fourth (No. 6) has not yet been reinoculated.

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As we remarked above, the culture taken out of a collodion bag, after a stay of 15 or 20 days in the peritoneum of a rabbit, no matter how rich it may be, does not give rise to any growth when reinoculated *in vitro*, in the air or vacuum, in any of the solid or liquid medias ordinarily used in bacteriology. However, cultures very nearly alike those of the bags can be obtained. But for that one must use sterile bouillon for liquid of culture, not inoculated, and which for several weeks has been kept in collodion bags within the peritoneum of a cow or a rabbit. Though free from virulent germs, this bouillon is also modified

by the exchanges which go on through the wall of the sac; it becomes slightly albuminous; and above this obtains the quality of becoming useful for the culture, *in vitro*, of the pleuro-pneumonic microbe.

Once we have obtained by the inoculation of a few drops of pleuro-pneumonic serosity in peptone bouillon freshly prepared a culture similar to that of the bags. At least, the bouillon presented after remaining 72 hours in the thermostat the very slight opal aspect and the motile and refringent points which characterize this culture. But we were not able to renew the experiment, nor to make a second culture from that which we had obtained by chance.

This observation, however, confirmed us in the idea that the pleuro-pneumonic virus can be cultivated outside the organism.

What was required was to find a proper media for the culture. We succeeded after long researches. The fluid which has given us the best results is made by the addition of a very small quantity of rabbit or cow serum to the peptone solution, prepared by Mr. Louis Martin, to obtain large quantities of diphtheric toxine. The proportion of serum must not be above one-twenty-fifth (about 4 drops for 5 c.c. of the solution). No culture is obtained if the peptone solution of Witte or that of Chapoteau is used; and again culture does not take place in presence of inert gases or in vacuum.

The bouillon Martin serum not only allows the keeping up of the culture started during the sojourn in the collodion or reed-cane bags; it may also give a culture from the start, when it is inoculated with a trace of natural serosity.

Culture *in vitro* of the microbe of pleuro-pneumonia constitutes a great progress; it will be possible to study its toxine, try to modify its virulency; it always presents this advantage to preserve the pleuro-pneumonic virulency intact, while it has seemed to us that successive passages through the organism of the rabbit diminish it in a sensible manner. But the degree of receptivity to the pleuro-pneumonic virus varies so much, even in individuals of the same age and same breed, that we do not

dare to be very affirmative. It will be only by a great number of experiments that this question of attenuation of the virus can be solved.

As to the first point (preservation of the virulency by successive cultures *in vitro*), it is well established by the observation of the cow No. 7, mentioned hereafter; this cow, inoculated Feb. 26, 1898, with 10 drops of a sixth culture, died March 19, with an enormous œdematous swelling, entirely alike those produced by the inoculation of the most virulent pulmonary serosity.

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The discovery of the agent of the pleuro-pneumonic virulency does not only give the satisfaction of an overcome difficulty; the result strikes higher. It gives the hope to succeed also in the study of such other virus whose microbe remains unknown to this day.

What made the discovery of the microbe of pleuro-pneumonia difficult was: first, its extreme small size; second, and specially, the very peculiar conditions of its culture in artificial media.

Is it not justifiable to suppose the existence of microbes still smaller, while, instead of remaining *within* the limits of visibility, as it is for this one, are *beyond* them; in other words, it can be admitted that there are microbes which are invisible to the eyes of man.

Well! even for those microbes, their study is yet possible, providing a media proper to their culture is found. Even then, in these attempts at cultivation, one will not be satisfied, to judge of his success or failure, with the changes which are present in the aspect or transparency of the media. The culture of the microbe of pleuro-pneumonia is very rich; still it only gives rise to a slight dubious aspect, a scarcely visible opacity in the fluid; to be convinced of the reality of the culture one must examine it comparatively with a tube of the same bouillon not inoculated. Therefore, the possibility of a microbian culture without noticeable modifications in the

aspect and limpidity of the fluid can be admitted. Hence, in the supposition that this same microbe should belong to the class of those which are beyond the limits of visibility, the only criterions of its presence and growth by cultivation will be inoculation.

Perhaps, already, some experimenters have obtained such cultures; but they have overlooked them because, the fluid having kept its limpidity, they have thought it useless to inoculate it.

For this running of thoughts, cultivation *in vivo*, with collodion or reed-cane bags, which has been so useful already, has not said its last word; it has no doubt some other surprise in store for us.

CONCLUSIONS.

The agent of pleuro-pneumonic virulency is constituted by a microbe, extremely small; its dimensions, very much lower than that of the smallest known microbes, do not allow, even after coloration, to make out exactly its form.

The microbe grows easily in bags of collodion or of reed-cane placed in the peritoneum of rabbits.

It does not grow when inoculated *in vitro* in media of culture ordinarily in use.

On the contrary, it grows easily, when inoculated in the peptone-bouillon of Martin, to which serum of cow or rabbit is added in the proportion of one part of serum to twenty-five of bouillon.

(*To be continued.*)

[*Written specially for the American Veterinary Review.*]

OBSERVATIONS MADE IN CANINE MEDICINE.

"CONJUNCTIVITIS FOLLICULARIS."

By Frank H. Miller, V. S., New York City.

With a thorough appreciation of the multitudinous obligations entailed upon the time and patience of the veterinarian who devotes himself to the practice of general veterinary medi-

cine, including as it does a host of ailments existing among several distinct species of animals, I am not entirely surprised at times to find an exceedingly scanty store of really valuable literature at our command upon many of the diseased conditions which we are called upon to treat almost daily. Especially does this comparative dearth become real to us when in the interest of special medicine we seek not only the highest, but all the possible information we can gain upon some certain disease lying more particularly within our special domain. The more closely we inquire into the situation the more convinced we necessarily become that it is not entirely due to a lack of time by the practitioner to devote to the minutiæ of diseased processes observed and recorded, but in part also to a too implicit reliance upon the similarity of disease processes as manifest in the various animals and an all but universal tendency to slight the study of just those diseases which present themselves most frequently in every-day practice. With the motive of interesting my professional brother who may be thoughtfully inclined, and from long experience competent to bring forward matters of great interest to us all in just such cases, I will, with the kind permission of your valuable REVIEW, confine myself to a few observations upon that disease of animals known in text-books as "Conjunctivitis Follicularis," but which, in my opinion, from its localized nature in the great majority of cases, might more correctly be designated as "Conjunctivitis Follicularis Locularis." While this condition is not infrequently demonstrated in the horse and other animals, it is from its great frequency and common disastrous results in the dog, beyond doubt, one of the most important pathological conditions which the veterinarian is called upon to treat.

Here is an evidently local condition of a mucous membrane, apparently benign enough in itself, but which from its very location holds in its chain of immediate consequences such disagreeable features as constant and excessive escape of the lachrymal secretion over the face with discoloration of the hair, and only too often its complete removal and the production of a well

defined dermatitis in its course, while not infrequently corneal opacity and ulceration occur with all which that implies regarding permanent injury to vision. It is an almost daily occurrence where small animals are treated to have dogs of all breeds, ages and conditions presented for our consideration, with the history that since a more or less remote date, excessive lachrymation had been noticed, which, be it here remarked, will be found to have gone along without any degree of photophobia (or aversion to light as shown by closed eyes). The weeping has not diminished, but rather increased, under such household remedies as hot saline solutions, etc., not altogether to be despised by the veterinarian, until at the time of presentation photophobia and perhaps corneal complication are becoming patent (so called "film" of kennelmen), and the owner is satisfied that things have gone beyond his or her control. These symptoms may be confined to one or both eyes (more usually the latter). The condition has progressed insidiously from a state which evidently caused but little distress at first to animal or owner, until at present very grave possibilities are plainly in sight.

These cases as they come to us for treatment rarely have any history of particular value to us in forming our diagnosis beyond what I have mentioned. Upon inspection of the general condition of the conjunctiva we have but little difficulty in pronouncing it to be a disease affecting that membrane almost entirely; but we are at a loss to know how to reconcile the rather grave appearance of the conjunctival lamina of the cornea, the excessive lachrymation which in itself contains very scant evidences indeed of the deeper conjunctival disturbances as mucous or pus cells, with the comparatively healthy appearance of the palpebral conjunctivæ, which in very many cases reveals to us a state of true hyperæmia rather than inflammation. Frequently the corneal opacity is casually noticed to be toward the nasal side of that structure and to be in the great majority of cases confined entirely to infiltration into the superficial layer of the same. We may or may not at first be able to distinguish structural defect or erosion-like spots upon its sur-

face with the naked eye. Frequently minute blood vessels are seen radiating from the limbus toward the denser part of the opacity. Provided the animal has not been under treatment with agents which modify accommodation, we can usually see at a glance that the intrinsic muscles and nerves governing them are not manifestly involved.

The use of the opthalmoscope substantiates our opinion that the deeper structures are not implicated up to date, and that we have to all intents and purposes a local condition to interest ourselves in, which, in view of the corneal conditions, the rather surprisingly healthy appearance of the palpebral membranes, and abundant flow of clear lachrymal secretion, absence of foreign bodies, etc., we are oftentimes, particularly if no erosion of the cornea has been noticed, inclined to mistrust occlusion of the lachrymal duct, especially if one eye only be affected, as is often the case.

We next resort to the application of cocaine solution, that we may push our investigation further. Immediately it takes effect our suspicion of a choked duct is allayed, since the secretion almost immediately ceases to flow over the face. The condition is plainly one which has hypersecretion as one of its symptoms, and not a stenosis of the lachrymal duct, either catarrhal or otherwise. The most common error in the formation of our diagnosis in these cases, in my opinion, crops up right at this point of the examination. We are very liable while the organ is under cocaine to make a thorough and close examination of all the visible mucous membrane, oftentimes using the hand lens, and with its aid almost invariably detecting corneal abrasion more or less extensive, quite omitting to thoroughly examine the posterior aspect of the third lid. Either forgetting or ignoring the fact plainly brought out in the history, of the excessive secretion being long present prior to the corneal symptoms, ignoring the position the lesions hold upon the cornea, we hasten to give our diagnosis as keratitis probably due to irritation, give some form of treatment, oftentimes containing atropine, etc., and, with a word of encouragment to the

owner, send the patient forth, fully expecting a more or less rapid resolution under careful treatment. This diagnosis may be absolutely correct, so far as it goes, but its very incompleteness will almost certainly end in permanent injury to vision, inasmuch as the cause has not been demonstrated.

My personal experience has taught me the importance of carefully locating the relation of these corneal disturbances. So many of them lie internal to a line drawn perpendicularly through the centre of that part of the eye as to serve as a sort of wayside fingerboard to indicate the direction from which the all-important irritation is coming, and besides a most incomplete examination of the eye and its appendages has been carried out where the entire posterior surface of the membrana nictitans has been overlooked and not carefully passed upon. Had we taken the precaution, while the membrane was anæsthetized, to have picked it up carefully with a pair of eye forceps and drawn it well forward and reflected it upon itself and away from the eye and examined its posterior side thoroughly, we would in one and the same moment have been placed in position to have given a clear and complete diagnosis of the case and to have outlined a treatment calculated to speedily and certainly overcome the disease and check the ravages caused by it, rather than to have prescribed for a series of symptoms, leaving the process proper to itself and even aiding its progress, perhaps, by the use of certain agents as atropine, calomel, etc., since they appear almost invariably to greatly stimulate the condition, causing the entire chain of symptoms. In such an examination of a patient suffering from this particular form of conjunctivitis we are able to detect upon that portion of the mucous membrane covering the tertiary lid near, but invariably a short distance removed from, the fornix, a well-defined patch of granulations varying in area from a very small spot in some cases to almost the entire surface in others. The individual granulations are seen when examined by the lens to vary in size from that of the finest to the coarsest particles of sea sand, and in color and consistency from the smallest and softest semi-

transparent elevation to those of the larger and firmer, which, being perfectly carnified, lend to the patch the aspect of a dull, red, angry mass, according to the severity of the implication.

Having fully observed the local condition, we naturally enough turn next to a consideration of causes before attempting to outline treatment. As already remarked, the literature upon this, as many other diseases, is singularly scanty and, unfortunately, very conflicting. Fröhner and Möller, for instance, whom, from exceptional opportunity and special qualifications, are beyond doubt the greatest authorities upon this particular subject, quite disagree as to its cause. While they both seem to consider the granulations as the outcome of hypertrophy of the preëxisting lymphoid tissue in the conjunctiva, Fröhner looks upon the cause of this hypertrophy as arising from external irritation transmitted direct from the eye-ball, as dust, smoke, irritating gases, etc., and holds the corneal disturbances, and later symptoms of catarrhal conjunctivitis, etc., as entirely secondary to the formation of granulations, while Möller reverses the order and maintains that the granulations are secondary to the inflammatory changes going on in other parts of the eye or its appendages.

Personal experience both in the European clinics, where these very deductions have been made, as well as in private practice here, has almost convinced me that we cannot entirely ignore either theories, if we would reach the true etiology of this disease. That a chronic conjunctivitis may and occasionally does give rise to hypertrophy of the lymphoid tissue, not only of the lids, but upon the posterior aspect of the membrana nictitans, it would be idle to deny, but the very fact of animals suffering so frequently from not only severe but specific affections of the conjunctiva, as marked in distemper, for instance, without developing this particular chronic form of granulation which so commonly leads on to those disastrous results, goes far to convince me that the common cause does not lie in a general conjunctivitis. The increase in size of the follicles during those diseases is probably more of resorptious irritation,

since under those conditions it seems to have quite as great a tendency to involve lymphoid tissue in the palpebral conjunctiva as that lying hidden behind the tertiary membrane, and once the general inflammatory condition of the membrane subsides, the swollen tissue almost invariably disappears. It is in these cases a simple inflammatory hypertrophy, not truly an hyperplasie as the microscope reveals in examination of the majority of these cases in question.

Pre-existing conditions in the animal seem to play an extremely important role. While I am fully convinced of the close relations that such local irritants as mentioned by Fröhner bear to the presence of the patches of granulation, I cannot deny that a great percentage of the cases come especially among dogs, where from the nature of their external surroundings such influences would at least in great part be entirely wanting. That it should prevail among certain species of animals, as the dog, more than others, as the horse and cat, and that even certain types of animals should under similar circumstances be more frequently affected than others of the same species, seems to me to lend color to the possibility of anatomical as well as physiological factors being involved in each individual case.

I have seen this disease set up with the most disastrous results in valuable kennels from the use of lime wash upon the walls, and have treated a great many animals suffering equally when the cause could not be traced so definitely, and I must say plainly that I believe predisposition has much more to do with this condition than we have hitherto supposed.

Regarding treatment we have several alternatives, the desired end of all being to remove the rough, irritating granular surface as quickly and safely as possible, and thereby check the untoward symptoms which have already appeared in the eye proper from their ceaseless friction.

Since in very many of these cases the corneal symptoms are quite grave at the time the animal is presented, the period when mild medicinal treatment might suffice to at least hold matters in check has been lost to the veterinarian. I have made use of

mineral astringents in various strengths, with a fair amount of satisfaction in cases where symptoms were not too urgent and the granulations were but slightly organized or carnified, but have almost entirely abandoned that practice in favor of the thorough curetting of the surface with a dull instrument (generally using a small bone scoop), under cocaine anæsthesia. The curetting in my hands has proven far more rapid and effectual when properly carried out, and has the great advantage of leaving the healed surface in a much more normal condition than where repeated applications of escharotics have been used, this not infrequently giving a slight tendency to distortion of the fibrous lamina of the appendage when used in overstrength. After curetting I prescribe frequent spraying with 3 p. c. boracic acid solution.

In all cases where the corneal symptoms are marked by pain and abrasion, I invariably select the operation of excision of the entire offending membrane, and look upon local treatment by medicinal applications as the greatest mistake. Time is everything in these severe cases in saving vision, and there is no time to be lost in speculative treatment.

The operation of excision is extremely safe and simple and the results are immediate and, in the vast majority of cases, highly satisfactory, even where the secondary lesions are most serious.

To operate, produce a thorough anæsthesia of the eye and its appendages with 4 p. c. cocaine solution, taking the precaution to pick up the membrane and drop a few drops upon its posterior surface.

The instruments required are few and simple—a pair of small, flat dressing scissors, with blunt point curved laterally, one pair of eye forceps, one medium-sized curved needle and double thread of silk floss, all to be aseptic, and placed in basin of sterilized water.

Open the eyelids, spray out the eye thoroughly with 3 p. c. solution of boracic acid. Place a tape about the nose and muzzle the animal if it be a dog, drawing the same moderately tight

to occupy the patient's attention. Pick up the membrane by its margin with the forceps, and drawing it forward, transfix it from inward to without with the needle, form a short loop by the thread and remove the needle. By the thread draw the membrane far forward and after surveying the granulation field thoroughly, begin the excision with the scissors, carrying it well out around the granules, that none may be left behind. Avoid all haggling or mutilating of the operation field. Also avoid wounding the cornea or sclerotic by the silk while transfixing the membrane. Allow the eye to close for a few moments to check the hemorrhage, and then spray out coagula with the boric solution and the operation will be completed. My after treatment consists in hot baths of sterilized water and frequent sprays of the above-mentioned solution of boracic acid. Even where there exists much corneal opacity and erosion I find this simple procedure produces the best results. I can from experience say that I consider atropine in any form detrimental in these cases. Not only has it a tendency to disturb the lymph follicles in the conjunctiva generally, but it lowers the vitality of the individual cells, and so tends to ulcerative action in corneal abrasion as are so frequently present.

This operation in question has come down to us from the days of the empirical practitioner, and since it was performed by him for the relief of countless conditions both real and imaginary, we cannot wonder that it should be looked upon today with a degree of disapprobation by veterinarians. We are placed in a position very different from our ancient predecessors, by reason of our ability to properly select the particular form of treatment which gives the greatest hope of perfect results in any class of disease. Prejudices must not weigh to the disadvantage of our patients. We demand results. Practitioners there are who will still contend that removal of the membrana nictitans is a mutilation, but in the treatment of this particular condition it is to my mind entirely justifiable. The removal of a portion of the body whose presence, so far as I have been able to discover, is of importance to the judge of ani-

mals at places of exhibition rather than an essential in all cases to the animal's well being, should be a small consideration when a matter so vital as partial or total loss of vision is under consideration from its disease.

My personal experience has taught me its value as an operation and its timely selection has saved eyes where purely medicinal treatment would beyond doubt have proven futile. What we most require in connection with the study of this peculiar form of conjunctivitis is a deeper insight into its causes, predisposing and exciting, that we may if possible by our knowledge diminish the frequency with which it occurs as well as improve our methods of treatment.

I trust those of our profession who may have valuable notes, especially regarding its etiology, may feel kindly disposed and place them upon record for the general good, for only by this method can our knowledge be of the greatest value in arriving at truly scientific deductions.

ASEPTIC CASTRATION OF MALE ANIMALS.

GRADUATION THESIS BY R. J. STANCLIFT, STUDENT, NEW YORK STATE VETERINARY COLLEGE.

History.—The operation of castration is one that has been performed upon all domesticated animals and upon man for ten centuries B. C. (1.) The castration of man being first spoken of in the Bible in Isaiah, 56, 3; and ancient writers claim that the operation was in vogue before the time of Semiramis. (2.) Andramyties, the King of Lydia, is said to have sanctioned castration in both males and females of the human race for social reasons.

It is still practiced upon man in the Eastern countries that are of Mohammedan belief; also in China, and in some parts of India at the present time.

The castration of the female domesticated animals was known to the Danes in the sixteenth century, and they operated successfully upon sheep, swine, cows, and even mares. The

bitch is spoken of as being operated upon about the first of the present century.

These operations are performed upon cattle and swine very extensively in the Western and Southern States, and upon the bitch throughout the whole country at the present time.

The emasculation of the male domestic animals is of double importance in the animal industry, as it renders the animal more gentle and docile and more obedient to his master's will, as in the gelding. It also increases the production of meat both in quantity and quality in animals, which are kept for that purpose, as we see in the emasculated bull, the steer, or in the case of the emasculated boar, the barrow. This is perhaps more forcibly illustrated in the emasculation of the cock, which increases his weight and produces flesh of a much superior quality. The operation has been found to give best results in the meat-producing animals when performed at an early age.

Anatomy.—Before taking up the operation itself, it would be well to glance briefly at the anatomy of the seat of the operation.

In the normal animal, we have the testicles situated in the scrotum, between the thighs, in the horse and ruminants, while in the pig, they are situated more posteriorly and just below the perineum.

The scrotum is composed from without inwards of, first, the common integument, which is reflected from the thighs over the scrotum. This is thin and soft. It is covered with soft, downy hairs, and has a great number of sebaceous glands, the secretion from which keeps it soft and flexible. It is marked mesialy by a longitudinal raphe, which indicates a division into two portions, a right and left. Beneath the common integument, we have the dartos, a thin layer of muscular and elastic tissue, which is derived from the abdominal tunic and is continuous with it. This may be said to be the proper scrotal tunic, as besides covering the testicle, it sends a fold up between the testicles, called the septum scroti, corresponding to the outer longitudinal raphe. Beneath the dartos is the spermatic fascia,

which is derived from the external oblique muscle. This is attached around the external abdominal ring and passes down over the cord and testicle. Inside this, is the cremasteric fascia, which is an expansion of the cremaster muscle. This arises from the iliac fascia and passes down the inguinal canal and spermatic cord to surround the testicle. This fascia forms only an incomplete covering, while still deeper is the infundibuliform fascia, which is an extension from the transversalis abdominalis muscle fascia. This is funnel-shaped and commences at the internal ring, passing down over the cord and testicle, and on the inside is continuous with the outer serous covering of the testicle.

Then we have the two peritoneal coverings, which are brought down by the testicle when it passes from the abdominal cavity to the scrotum. The outer one is spoken of as the tunica vaginalis reflexa, and is united by cellular tissue to the infundibuliform fascia, on its outer surface.

The inner serous tunic, known as the tunica vaginalis propria, is attached on its inner side to the outer fibrous coat of the testicle; and the surface of these peritoneal coverings, which are in contact with each other, are lined with a single layer of squamous epithelium (endothelium) and thus forms a large lymph space, which is continuous with the peritoneal cavity, being, in fact, a portion of it, which was carried down with the testicle when it passed into the scrotum.

The testicle is the essential reproductive gland of the male. It is composed of an outer fibrous covering, from which trabeculæ extend inwards, dividing the gland up into pyramidal shaped spaces that contain the active secreting gland substance. It is surmounted on the superior border by the epididymis, which is the first portion of the excretory canal and which terminates in the vas deferens.

The testicle is suspended in the scrotum by the spermatic cord, which is composed of the vas deferens, posteriorly, and on the anterior border we have the great testicular or spermatic artery, which is very tortuous; and between these, we have a

band of gray muscular fibres, and also the small testicular artery. These are all bound together by loose cellular tissue, which also contains nerves, lymphatics and the accompanying veins of the arteries. The spermatic cord extends from the testicle up to the external abdominal ring; inferior to this, it has the covering of the scrotum. It enters the inguinal canal and passes into the abdominal cavity, through the internal abdominal ring; here we will leave it, as for our purpose it is not necessary to trace it any further.

METHODS OF OPERATING WHICH ARE IN VOGUE AT THE PRESENT TIME.

The operation consists in the removal of the essential organs of generation, the testicles, or by bringing about a cessation of their functions. The methods used at the present time to bring this about can be divided into three classes.

The first class would include those operation, by which the envelopes of the testicle are cut through and the organ removed by section of the spermatic cord. This would include simple section of the cord with a sharp knife, which is claimed to be one of the oldest methods, and is still used upon some of the smaller animals. With larger animals, there is danger of profuse hæmorrhage.

Scraping is but a modification of the preceding operation, and consists in using a dull instrument to scrape the cord slowly through. This, by lacerating the walls of the artery hastens clot formation but is sometimes followed by severe hæmorrhage.

Torsion of the cord :—This is brought about after the envelopes have been cut through by grasping the cord at the point where it emerges from the incision, with forceps or the hand, and fixing it firmly; then with forceps or the hand grasping the cord just above the testicle, and by twisting to rupture the cord between these two points. This, by twisting and lacerating the fibrous coat of the arteries, occludes them and checks the hæmorrhage.

Crushing of the cord :—This is very common at the present

day, and is accomplished by the use of the ecraseur, or by the emasculator, an instrument which has attained great popularity in the last decade; and, last, section of the cord by actual cautery. This is accomplished by applying a broad wooden clamp upon the cord up as close as possible to the scrotum and then applying a dull red hot cautery to the cord and severing it with this. The stump of the cord is cauterized until it is carbonized, and as soon as this is accomplished is released from the clamp.

The second class is but a modification of the first. Here the envelopes are incised the same as in the first, only there are applied certain means of pressure to the cord which are allowed to remain on. These are applied before amputation of the testicle, and consists of two methods—the application of clamps or of a ligature. The method of applying clamps is a very ancient mode of operating. It is performed in two ways—the covered and the uncovered.

In the uncovered operation, the envelopes of the testicle are incised and the testicle removed from the envelopes. The clamps are applied to the cord above the epididymis and secured; then, the testicle and the remainder of the cord below the clamp amputated with a sharp scalpel. The clamps are usually made of wood and are two semicylindrical pieces joined together with strong cord. The surfaces that come in apposition usually have a longitudinal groove, which helps to prevent slipping, and by some operators this is filled with caustic paste. The clamps are usually allowed to remain on from thirty-six to sixty hours.

The covered operation.—In this, the envelopes are incised down to the cremasteric fascia. This is carefully dissected away from the outer envelopes and then the clamps are applied over the remaining unopened envelopes and the cord and secured here; then the testicle and surrounding envelopes are excised.

By ligation.—This is done by applying a ligature over the cord, after exposing the testicle by ligating the spermatic

artery or by ligating over the inner envelopes after separating them from the outer, the same as for the covered operation, with the clamps.

In all these cases, the amputation is below the ligature.

In ruminants, which have a long pendulous scrotum, some operators have ligated the entire scrotum and allowed it to slough off. In these cases, an elastic ligature is preferable.

The third class would include those modes of operating where the scrotum is not incised, or a portion of it destroyed by the operation. These consist in either crushing the spermatic cord or operating by double subcutaneous torsion.

Crushing the cord is only practicable in the pendulous scrotum of the ruminant. The cord enclosed in the scrotum is placed between two straight sticks, which have squared edges, and these are struck until the cord is crushed sufficiently to cause atrophy of the testicle to follow.

The double subcutaneous torsion of the testicle is produced by so manipulating the testicle in the scrotum as to produce a twisting of the spermatic cord and thus cause an interference with the blood supply of the testicle and atrophy from innutrition. This operation is also only applicable in ruminants, on account of its requiring a pendulous scrotum. Both are used in southern France, but are not in general use, as they are not always certain in producing the desired effect, besides having the disadvantage of the persistent atrophied testicle in the scrotum, which might be objectionable. For these reasons, the third class will not be considered any further.

The first two classes leave the scrotum open after the removal of the testicle. We find our veterinary writers mentioning swelling, (3) secondary hæmorahage and suppuration (1) as the normal results of these methods of castration; also of peritonitis, abscess of scrotum, tetanus, champignon or schirrous cord, gangrene of the scrotum and glanders (4) as the abnormal sequelæ. All of these results, except the swelling, which may be an œdematous condition of the scrotum without infection, and the secondary hæmorrhage may be traced directly to bac-

terial infection; for tetanus has been proved to be due to a specific micro-organism, the baccilus tetani, as also has glanders to the B. mallei. Champignon or schirrous cord, or fistula of the scrotum, has been found to be due to infection with botryomyces (5), though it has not been proven that all of these cases are due to infection with this specific micro-organism.

The other sequelæ may be produced by a number of the pathogenic bacteria, which are pus producers, or are capable of producing septicæmia; bacterial infection is the danger to be feared in the operation and it is only to this that the bad results and fatalities can be traced. If we can carry on the operation without this infection, we have removed this danger, be it much or little.

The question arises, how can we prevent this infection? The majority of the veterinarians of the present day try to perform the operation under more or less complete antiseptic precautions, but after the operation is completed, even provided there has been no infection during this time, the wound is left open, and in all the methods, except the covered operation, there is a direct opening into the peritoneal cavity. Even in the covered operation, there is left the open scrotal wound.

These wounds always become infected to a greater or lesser degree, but those where there is an opening into the peritoneal cavity are the more dangerous. If, as in the majority of cases, the infection is slight, we have a correspondingly slight discharge of whitish creamy inoffensive pus, which some writers have called laudable pus, but which with our present knowledge of bacteriology cannot be recognized as such, for, clinically, we do not get pus formation without infection, and certainly infection is not laudable.

In these cases, there is usually healing by the granulation process, while if we get a virulent infection, we have what has been called the abnormal results of castration, as peritonitis, abscess of the scrotum, gangrene; or, if the infection is due to specific micro-organisms, tetanus, glanders or champignon, and the correspondingly bad results.

With the necessary environment of our domesticated animals, it is impossible by these methods of procedure to have practical antisepsis, which is necessary to have healing by primary adhesion. By obtaining healing by primary intention we do away with those sequelæ which are due to infection and thus lessen the danger of the operation.

In considering how we are to prevent infection, we must first determine how and where the infection can come from. This can all be summed up in three ways:

First, the infecting material may be upon the seat of the operation.

Second, it may be brought to the wound by the operator or his assistants.

Third, it may gain entrance after the operation has been performed.

These can be best considered in the order as given.

First, to prevent infection from seat of operation. Here, upon the skin, we have a great variety of micro-organisms, and these may consist of those which live upon the epidermis, and those obtained from the litter or earth. The latter are the more dangerous, as in these we may have the bacillus tetani or the bacillus of malignant œdema.

The seat of the operation should be cleaned thoroughly with soap and water and then disinfected afterwards with some good antiseptic, which can be washed off with distilled or boiled water, at the time of the operation.

Second, infection by operator or assistant. Here the infecting agents may be brought by the instruments used or by the hands or clothes of the operator. To prevent this, the operator's hands and clothes should be perfectly clean and the hands disinfected, the instruments sterilized, preferably by boiling or by a good antiseptic, and nothing allowed to touch the wound but what has been disinfected.

Third, the infection of the wound after the operation. In our domestic animals, we cannot apply any bandages or dressings to the scrotum, which can be kept in place, and thus obtain

healing by primary adhesion, and if the wound is left open it is certain to become infected, so the only recourse is to close the wound by sutures and apply antiseptics to the parts until healing occurs.

The Aseptic Operation.—With a view of obtaining these results, a series of operations were carried out under antiseptic precautions at the clinic of this college. The general method of proceeding was as follows:

The animal was kept in the general ward one day in order to prepare it for the operation, and was fed a restricted laxative diet. The body of the animal was thoroughly cleansed and the sheath and scrotum well washed with soap and water.

At the time of operating, the patient was taken to the operating room, placed upon the operating table and chloroform administered. While this was being done, the scrotum and sheath were washed thoroughly with soap and water, after which the parts were wet well with sublimate solution, 1–1000; also the inner surfaces of the legs were moistened with this solution. As soon as the patient was anæsthetized the upper hind leg was drawn upward and forward out of the operator's way.

The instruments to be used were sterilized by being boiled for ten minutes in water, to which was added sufficient sodium bicarbonate to prevent oxidization of the instruments. The operator's hands were thoroughly cleansed with soap and water, great care being taken to clean the finger-nails, afterwards washing the hands in sublimate solution, 1–1000. The sublimate solution was then washed off the scrotum with boiled water; the upper testicle grasped by the operator's hand and an incision made through the scrotum at its most dependent part, parallel to the longitudinal raphe and from one to two inches on either side of it. This incision was just large enough to allow the testicle to slip out endwise.

The testicle was grasped by the hand and gently drawn well out. In cases I, II and III this was held by an assistant; but in the others, was fixed with a clamp.

A half-curved needle, threaded with sterilized catgut, was

passed through the middle of the cord, where it emerged from the incision, or where it was held by the clamp as close to the instrument as possible. The anterior part of the cord was ligated, and without cutting the ligature, the whole of the cord was included in it; the cord severed below with the emasculator; the proximal end released from the clamp and any blood present washed off with boiled water, and the wound closed with sterilized catgut.

The operation was repeated on the other side, after which the scrotum was washed with sublimate solution, the released leg again secured to the table and the patient allowed to recover from the anæsthetic, when he was returned to the general ward, where he was fed light for the first few days. Any deviation from this plan will be mentioned under the report of such cases.

Report of Animals Operated Upon.—No. I (546) was a black stallion, thirteen years old, weight about 1200 pounds, in good condition. Sept. 26, 1897, admitted to general ward and prepared for operation; Sept. 27th, 2 P. M., patient placed upon operating table and operated upon under strict aseptic precautions; closed wound with interrupted sutures; dressed with iodoform. Sept. 28th, 8 A. M., temp. 100.2; 4 P. M., temp. 100.1; very slight amount of serum exuding from wound. Sept. 29th, temp. 2 P. M., 100.2; 4 P. M., 100.2. There were a few drops of serum exuding from the wound. Sept. 30th, 9 A. M., temp. 100; 4 P. M., temp. 100.4; no discharge of serum from wound. Oct. 1, 9 A. M., temp. 100.2; no discharge from wound. While animal was under observation, the scrotum was washed once daily, with sublimate solution, 1–1000. The owner removed animal Oct. 1st and reported later that the wounds healed without any suppuration.

No. II. (516) was a bay stallion, three years old; weight about 1000 pounds, in medium condition. Sept. 30, 1897, admitted to ward and prepared for operation. Oct. 1, 2 P. M., placed animal upon operating table and operated under strict aseptic precautions, closed wound with interrupted sutures;

dressed with iodoform. Oct. 2d, 9 A. M., temp. 101.2 ; pulse 36, resp. 12 ; 2 P. M., temp. 101.2 ; pulse 36, resp. 12 ; animal eating half ration ; very slight exudation of serum from wound. Oct 3d, 9 A. M., temp. 101.1, pulse 38, resp. 12 ; 6. P. M., temp. 101. ; pulse 36, resp. 12 ; animal eating well ; looking well ; no exudation of serum from scrotum. Oct. 4th, 9 A. M., temp. 101, pulse 37, resp. 12 ; animal looks well ; scrotum still somewhat enlarged. While under observation the scrotum was washed once daily with sublimate solution, 1–1000.

The owner removed animal Oct. 4th, and reported later that the wound healed without any suppuration.

No. III. (738) was a large well developed Berkshire boar, five years old, in good condition, weight about five hundred pounds. Feb. 2, 1898, admitted to ward 2 P. M., was thrown and confined with ropes ; the scrotum, scrubbed with soap and water, then rinsed off with sublimate solution, 1–1000, and this washed off with boiled water, then proceeded with the operation. The testicles were removed through small incisions in the lower portion of the scrotum ; the cord was ligated and severed below ligature with the emasculator. The wound was closed with a continuous suture of silk and the scrotum wet with sublimate solution. Feb. 3d, the animal, stiff from struggling when tied, but bright, eating half ration. Scrotum about as large as before operating ; no discharge of serum. Feb. 4th, scrotum about the same ; no serum from wounds ; appetite better. Feb. 5th, scrotum slightly decreased in size ; no discharge of serum from wounds. Feb. 6th, animal very lively ; scrotum slightly smaller. Feb. 7th, animal eats all he can get ; scrotum about two-thirds as large as before operating. Feb. 8th, scrotum about one-half size as it was berore operating, and the epithelium appears to haae joined over the wounds. Feb. 9th, scrotum about one-third original size, and as wound seemed to be entirely covered with epithelium, the patient was discharged.

The owner reported later that the animal recovered without incident.

No. IV. (855) was a dark bay stallion, five years old, weight

about 1050 pounds, in medium condition; Mar. 24, 1898, admitted to ward and prepared for operation. Mar. 25, 11 A. M., placed animal upon operating table and operated under strict aseptic precautions, closed wounds in scrotum with continuous suture of catgut. There was some subcutaneous hæmorrhage, which produced a hematom on the right side. This was about the size of the testicle. 4 P. M., temp. 100; pulse 40; resp. 13. Mar. 26th, 8 A. M., temp. 101.1; pulse 43; resp. 12. 8 P. M., temp. 101.1; pulse 38; resp. 14; animal bright; scrotum about the same size; nothing exuding from the wound; Mar. 27th, 9 A. M. temp. 100.8; pulse 36; resp. 12; no exudation from wounds. Mar. 28th, 9 A. M., temp. 101.6; pulse 36; resp. 12; 3 P. M., temp. 101.9; pulse 36; resp. 12; scrotum about the same. Mar. 29th, 8 A. M., temp. 100.6; pulse 40 resp. 12; 3 P. M., temp. 102.1; pulse 38; resp. 12; the scrotum has decreased in size somewhat, but the sheath has become œdematous. Mar. 30th, 8 A. M., temp. 100.2; pulse 36; resp. 12; animal is in good spirits, but during the night broke the sutures on the right side (this being the side that the hematom was on); the wound was now opened, the clot removed, and the parts irrigated with sublimate solution, 1–1000. A portion of the clot was taken and agar and bouillon tubes inoculated with it. 3 P. M., temp. 100.2; pulse 36; resp. 12. Mar. 31st, 8 A. M., temp. 103; pulse 46; resp. 15; 3 P. M., temp. 101.8; pulse 38; resp. 12; scrotum about the same size; no pus on the right side. Apr. 1st, 8 A. M., temp., 101.8; pulse 40; resp. 12; 3 P. M., temp. 103; pulse 50; resp. 14; opened and washed out left side, but there was no infection seemingly. The swelling has gone down greatly. Apr. 2d, 8 A. M., temp. 105; pulse, 48; resp. 14. Animal dull, did not eat entire breakfast. 3 P. M., temp. 106; pulse 68; resp. 16; washed out both wounds in scrotum, with sublimate solution, also gave ball composed of Barbadoes aloes, drachms vi; sulph. quinine, ounce 1. Apr. 3d, 8 A. M., temp. 103.8; pulse 64; resp. 14. 3 P. M., temp. 104.2; pulse 55; resp. 14; animal eating well; no pus from wound. Apr. 4th, 8 A. M., temp. 104.5; pulse 42; resp. 14; very slight

swelling of scrotum; no pus. Apr. 5th, 8 A. M., temp. 101; pulse 46; resp. 12; 3 P. M., temp. 102; pulse 42; resp. 12; no pus. Apr. 6th, 8. A. M., temp. 102.4; pulse 42; resp. 12; 3. P. M., temp. 102.6; pulse 42; resp. 12; Apr. 7th, 8 A. M., temp. 100.4; resp. 12; pulse 38; 3 P. M., temp. 100.2; pulse 36; resp. 12; the scrotum normal in size; the left wound has closed entirely, the right nearly closed. Apr. 8th, 8 P. M., temp. 99.8; pulse 36; resp. 12; 2 P. M., temp. 100; pulse 36; resp. 12; no discharge from wound. The owner took animal home and reported ten days later that the wound healed without any perceptible pus formation. The cultures that were made from the hematom on Mar. 30th, developed a pure culture of the staphylococcus pyogenes aureus. Each day the animal was under observation, the scrotum was washed twiced daily with sublimate solution 1–1000.

No. V. (879) was a dark bay stallion, six years old, weight about 1000 pounds, in good condition. Apr. 1, 1898, admitted to ward and prepared for operation. Apr. 2d, 9 A. M., animal placed upon table and operated upon under strict antiseptic precaution; closed wounds with interrupted sutures. Apr. 3d, 9 A. M., temp. 101; resp. 14; pulse 38; 5 P. M., temp. 101.2; resp. 14; pulse 40; animal bright, eating well; scrotum about size as before operating. Apr. 4th, 8. A. M., temp. 101.2; pulse 40; resp. 14; 3 P. M., temp. 101.3; pulse 40; resp. 14; scrotum same; no exudation of serum. Apr. 5th, 8 A. M., temp. 100.4; pulse 36; resp. 12; 3 P. M., temp. 101; pulse 38; resp. 12; Apr. 6th, 8 A. M., temp. 101; pulse 44; resp. 14; 3 P. M., temp. 101.2; pulse 42; resp. 12; scrotum about the same; no exudation of serum. Apr. 7th, 8 A. M., temp. 101; pulse 40; resp. 12; 3 P. M., temp. 100.8; pulse 37; resp. 12. Apr. 8th, 8 A. M. temp. 100.6; pulse 38; resp. 12; 3 P. M., temp. 101; pulse 38; resp. 12; scrotum considerably smaller; no exudation from wound. Apr. 9th, 8 A. M., temp. 100; pulse 36; resp. 12; 3 P. M., temp. 100.8; pulse 38; resp. 12; scrotum about one-half original size. The epithelium has united over the wounds, so that the patient was discharged at this time.

No. VI. (1027) was a bay yearling colt of medium size, in fair condition. May 3, 1898, admitted to ward and prepared for operation. May 4th, 11 A. M., placed animal upon operating table and operated under usual precautions. The cord was ligated with sterile silk and the scrotal wounds closed with interrupted sutures of sterile silk, and over this wound gelatin applied (8). May 5th, 9 A. M., temp. 101.6; 3 P. M., temp. 101.5; very slight swelling of scrotum. May 6th, 3 P. M., temp. 101.3. May 7th, 3 P. M., temp. 102.2. May 8th, 9 A. M., temp. 101.6. May 9th, 9 A. M., temp. 102.7. May 10th, 3 P. M., temp. 101. May 11th, animal discharged. During time since operation, the animal was bright and ate well. To-day the wounds appear to be covered with epithelium. There was no exudation of serum at any time.

No. VII. (1029) was a yearling colt of medium size in fair condition. May 4, 1898, admitted to ward and prepared. May 5th, placed animal upon operating table and operated under aseptic precautions; the cord was ligated with silk, and the scrotal wounds were closed with a continuous suture of sterile silk, over which was applied wound gelatin. May 6th, temp. 100.6; scrotum was not swollen at all; the patient was feeling well. May 7th, 8 A. M., temp. 101.8; 3 P. M., temp. 102; very slight swelling of scrotum. May 8, 8 A. M., temp. 102; 3 P. M. 101. May 9th, 8 A. M., temp. 101.6; 3 P. M., 101.8. May 10th, 8 A. M., temp. 101.5; 3 P. M., temp. 100. May 11th, temperature was not taken. May 12th, 2 P. M., temp. 101.2; animal discharged. During the time since operating the patient had been in good spirits and eating well, and there had been no discharge of serum from wounds. When discharged the epithelium was united over the wounds.

No. VIII. (1025) was a brown four-year-old colt, in medium condition; weight about 950 lbs. May 2, 1898, admitted to ward and prepared for operation. May 3d taken to operating room and operated upon under septic precautions. The covered operation was performed and was ligated with silk; scrotal wounds closed with continous suture of silk. May 4th, 4 P. M., temp. 101;

scrotum swollen somewhat. May 5th, 9 A. M., temp. 101.7; 3 P. M., 102.2. May 6th, 9 A. M., temp. 100.7; 3 P. M., temp. 101.7; swelling of scrotum much increased. May 7th, 9 A. M., temp. 101; 3 P. M., temp. 101.9; scrotum about the same. May 8th, temperature not taken. May 9th, 9 A. M., temp. 105.5; 3 P. M., 102.8; scrotum very badly swollen and suppurating somewhat. Opened up wounds and found a large hematom on each side, which was doubtless due to the spermatic artery slipping upward out of the ligature and bleeding quite extensively. Removed hematom and washed out scrotal cavities with sublimate solution. May 10th, 9 A. M., temp. 101.6; 3 P. M., temp. 103.4; swelling markedly decreased; slight discharge. May 11th, 3 P. M., temp. 103; swelling still decreasing. May 12th, 9 A. M., temp. 101.3; 3 P. M., temp. 101. May 13th, 9 A. M., temp. 100.6; 3 P. M., temp. 102.4; swelling about disappeared; no discharge. Each day, since opening wounds in scrotum, it was washed out with sublimate solution; discharged.

No. IX. (1055) was a black four-year-old colt, weight about 1000 lbs., in good condition. May 9, 1898, admitted to ward and prepared for operation. May 10th, placed upon operating table and operated upon under aseptic precautions; ligated the cords with silk; closed wound with continuous sutures of silk, over which was placed wound gelatin; at 4 P. M., temp. 101. May 11th, 3 P. M., temp. 100.6; scrotum swollen very little. May 12th, 9 A. M., temp. 100.7; 3 P.M., temp. 101; no change in scrotum. May 13th, 9 A. M., temp. 99.8; 3 P. M., temp. 100.8. May 14th, 3 P. M., temp. 100.8; slight decrease in swelling of sheath. May 15th, 9 A. M., temp. 99.4. May 16th, 9 A. M., temp. 100.5; 3 P. M., temp. 100.5; there is no appreciable swelling in sheath or scrotum. May 17th, 9 A. M., temp. 100. The epithelium is apparently closed over the wounds; patient was discharged.

No. X. (1062) was a bay colt, one year old, of medium size and in moderate condition. May 10, 1898, admitted to general ward and prepared for operation. May 11th, the animal was placed on operating table and operated upon under aseptic

precautions, ligated the cord with silk, closed scrotal wounds with silk, and applied wound gelatin. Temperature before operating, 101.2. May 12th, 9 A. M., temp. 101.2 ; 3 P. M., temp. 101.8 ; no swelling of scrotum. May 13th, 9 A. M., temp. 101.2 ; 3 P. M., temp. 102.2. There is a very slight swelling of the scrotum. May 14th, 3 P. M., temp. 102.2 ; swelling about the same. May 15th, temperature not taken. May 16th, 3 P. M., temp. 101. May 17, colt out in paddock, did not take temperature. May 18th, discharged ; the scrotum not swollen, and the wound apparently closed over with epithelium.

No. XI. (1063) was a bay stallion, seven years old ; weight about eleven hundred pounds, in medium condition. May 11, 1898, animal admitted to general ward and prepared for operation. May 12th, 11 A. M., placed upon operating table and operated upon under aseptic precautions, ligated the spermatic artery with silk, closed scrotal wounds with silk, and applied wound gelatin ; 11.40 A. M., temp. 100.6, animal recovering from anæsthetic ; 2 P. M., temp. 99.4. May 13th, 9 A. M., temp. 101 ; 2 P. M., temp. 100.8 ; very slight swelling of scrotum. May 14th, 9 A. M., temp. 101.2 ; 2 P. M., temp. 101.2 ; scrotum about same. May 15th, 9 A. M., temp. 102.6 ; 6 P. M., temp. 101.7 ; animal quite constipated, for which gave laxative. May 16th, 9 A. M., temp. 100.5 ; 3 P. M., temp. 101.6. May 17th, 9 A. M., temp. 101.9 ; 2 P. M., temp. 101.6 ; scrotum not swollen at all. May 18th, temp. 102 ; 2 P. M., temp. 101.8. May 19th, 3 P. M., temp. 100.8. The wounds are apparently covered with epithelium ; discharged. During the last five days animal was badly constipated, but fully recovered before discharged.

No. XII. (1056) was a black colt, three years old, weight about 900 lbs., in good condition. May 9, 1898, admitted to general ward and prepared for operation. May 10th, placed on table and operated under aseptic precautions ; ligated the spermatic artery with silk and closed scrotal wounds with a continuous suture of silk. The animal was removed from table before he was able to stand and causing him to fall, soiling the scrotum and rubbing off the wound gelatin which had been

applied. When he had recovered sufficiently to stand, the scrotum was washed with sublimate solution, and the patient returned to the general ward. May 11th, 9 A. M., temp. 101.2; pulse 39; resp. 14; 3 P. M., temp. 101.2; pulse 39; resp. 14; scrotum about two-thirds original size. May 12th, 9 A. M., temp. 100.6; pulse 36; resp. 12; 3 P. M., temp. 101; pulse 36; resp. 12. May 13th, 9 A. M., temp. 100.6; pulse 36; resp. 12; 3 P. M., temp. 101; pulse 44; resp. 14; scrotum swollen moderately; the sheath swollen somewhat more. May 14th, 9 A. M., temp. 103; resp. 12; pulse 44; 3 P. M., temp. 102.4; resp. 12; pulse 46. May 15th, 9 A. M., temp. 101.4; pulse 39; resp. 12. May 16th, 9 A. M., temp. 101; pulse 37; resp. 12; 3 P. M., temp. 102; pulse 36. A suture was broken on the right side, and there was a small amount of serum exuding. May 17th, 9 A. M., temp. 101.6; pulse 38; resp. 12; 3 P. M., temp. 102.2; pulse 38; resp. 12; the serum still continues to exude from right side; the left side is doing finely; swelling of scrotum much decreased. May 18th, 9 A. M., temp. 101.1; pulse 36; resp. 12; 3 P. M., temp. 101; pulse 38, resp. 12; slight discharge of serum from right side. May 19th, 9 A. M., temp. 101; pulse 36; resp. 12; 3 P. M., temp. 101; pulse 36; resp. 12. May 20th, 9 A. M., temp. 100.4; pulse 36; resp. 12 - 3 P. M., temp. 100.4; pulse 36; resp. 12; the sheath and scrotum is still slightly swollen; the left wound has healed by primary adhesion; and the right is healing by secondary intention, without perceptible pus formation.

No XIII. (1069) was a brown colt, two years old; weight about 800 lbs., in poor condition. May 12th, admitted to ward and prepared for operation. May 13th, placed upon table and operated upon, under aseptic precautions; ligated spermatic artery with silk, closed scrotal wounds with a continuous suture of silk. May 14th, 9 A. M., temp. 101.3; 3 P. M., 102; very slight swelling of scrotum. May 15th, 9 A. M., temp. 101.8; 3 P. M., temp. 102. May 16th, 9 A. M., temp. 101.1; 3 P. M., temp. 100.8; swelling of scrotum gone down. May 17th, 9 A. M., temp. 101.4; 3 P. M., temp. 100.8. May 18th, 9 A. M.,

temp. 100.1. May 19th, 3 P. M., temp. 100. May 20th, 3 P. M., temp. 100; wounds healed over; patient discharged.

TEMPERATURE CHART.

No. of Case.	Temp. day of Operation.	Temperature after operation.									
		1st day	2d day.	3d day.	4th day.	5th day.	6th day.	7th day.	8th day.	9th day.	10th day.
I.—9 A. M.	Not	100.2	100.2	101.	100.4						
3 P. M.	taken.	100.1	100.2	100.4							
II.—9 A.M.	Not	101.2	101.1	101.							
3 P. M.	taken.	101.2	101.1	.....							
III.—9 A.M.	} Tem	peratu	re not	taken.							
3 P. M.	}										
IV.—9 A.M.	.....	101.1	100.8	100.6	100.2	103.	101.8	105.	103.8	104.5	101.
3 P. M.	100.	101.1	101.9	102.1	100.2	101.	103.	106.	104.2	103.5	102.
V.—9 A.M.	.....	101.	101.2	100.4	101.	101.	100.6	100.			
3 P. M.	100.	101.2	101.3	101.	101.2	100.8	101.	100.8			
VI.—9 A.M.	Not	101.6	.....	.....	101.6	102.7					
3 P. M.	taken.	101.5	101.8	102.2	.....	.....	101.				
VII.—9 A.M.	Not	100.6	101.8	102.	101.6	101.5	Not				
3 P. M.	taken.	.....	102.	101.	101.8	100.	taken.	101.2			
VIII.—9 A.M.	Not	....	100.7	100.7	101.	Not	105.8	101.6		101.3	100.6
3 P. M.	taken.	101.	102.2	101.7	101.9	taken.	102.8	103.4	103.	101.	102.4
IX.—9 A.M.		.....	100.7	99.8	.....	9 .4	100.5	100.			
3 P. M.	101.	100.6	101.	100.8	100.8	.....	100.5				
X.—9 A.M.		101.2	101.2	.....	Not	.....					
3 P. M.	101.2	101.8	102.2	102.2	taken.	101.					
XI.—9 A.M.		101.	101.1	102.6	100 5	101.9	102.				
3 P. M.	99.4	100.8	101.2	101.7	101.6	101.6	101.8	100.8			
XII.—9 A.M.	Not	101.2	100.6	100.6	103.	101.4	101.	101.6	101.1	101.	100.4
3 A.M.	taken.	101.2	101.	101.0	102.4	.....	102.	102.	101.	101.	100.4
XIII.—9 A.M.	Not	101.3	101.8	101.1	101.4	100.1					
3 P. M.	taken.	102.	102.	100.8	100.8	.....	100.2	100.1			

SUMMARY.

The only literature available upon this subject is an article by Frick (6), in which he speaks of Bayer operating upon fifteen cases under aseptic precautions, where he had healing by primary adhesion in four cases on both sides, and in two cases on one side, so that out of thirty operation wounds, ten healed by primary adhesion or thirty-three and one-third per cent. The other wounds healed according to Bayer's opinion better than where operated upon with clamps. Frick, in speaking of Bayer's operation, says he does not think it is practical in private practice, as Bayer only ligated the spermatic artery, and when the animal got up there would be bleeding from the veins.

Frick operated upon some animals under aseptic precautions

No. of Case.	Initial of Operator.	Previous experience in Castration.	Previous experience with the Aseptic Operation.	Mode of Operation.	Mode of Healing.	Complications.
I.	H. W. D.	None.	None.	Ligated spermatic cord. Closed scrotal wounds with interrupted sutures (catgut).....	Primary adhesion.	None.
II.	A. B. K.	2 cases.	do	do	do	do
III.	R. J. S.	15 cases.	do	Ligated cord, closed scrotal wounds with continuous sutures (silk).....	do	do
IV.	R. J. S.	do	Case III.	do (catgut)	Secondary intention without suppuration.	Hæmatoma and infection.
V.	R. J. S.	do	Case III and IV.	Interrupted sutures (catgut) do.....	Primary adhesion.	None.
VI.	H. J. L.	None.	None.	Continuous sutures (silk) do...	do	do
VII.	C. R. P.	do	do	do (used wound gelatin).....	do	do
VIII.	W. L. W.	400 cases.	*	Covered operation, silk ligatures, wound gelatin...	Secondary intention.	Hæmatoma and infection.
IX.	C. W. G.	None.	None.	Ligated cord, silk sutures. wound gelatin.....	Primary adhesion.	None.
X.	W. J. M.	do	do	Ligated cord, continuous sutures (silk), wound gelatin.....	do	do
XI.	A. B. K.	2 cases.	Case II.	Ligated spermatic artery; closed scrotal wounds with continuous sutures (silk gelatin)....	do	do
XII.	R. J. S.	15 cases.	Case III, IV and IV	Ligated spermatic artery. Closed scrotal wounds with continuous sutures (silk) (gelatin).....	Primary adhesion (one side).	do
					Secondary intention (one side).	do
XIII.	C. B. P.	None.	None.	do.....	Primary adhesion.	do

* Had attempted aseptic operation on six horses without chloroform; four by covered operation and two by baring testicles, washing the wounds with sublimate solution, 1-1000, and closing with sutures, none of which were successful.

by what he considered a more practical method. His method was, one-half hour before operating, the animal was given .5 grammes hydrochlorate of morphine. The animal was placed upon his back, and the scrotum, sheath, inner thighs and neighboring parts washed with soap and water. This was rinsed off with sublimate solution, 1-1000, then an incision was made in the scrotum, barely large enough to allow the testicle to be pressed out; when the testicle was exposed, an assistant poured sublimate solution over it. The testicular cord was perforated just anterior to the vas deferens, making two portions, and ligated each portion firmly with sublimated silk. To prevent the ligature slipping off, a part of the epididymis was allowed to remain on the cord, when the testicle was excised. This, he says, is aseptic and is resorbed. The scrotal sac was washed out with sublimate solution and the wound closed with sutures. The operation was repeated upon the opposite side, and the animal allowed to rise, when the scrotum was again washed with sublimate solution. The instruments used and the operator's hands were disinfected with sublimate solution, 1-1000. There occurred in most of his cases, on the second or third day after operating, a fever, which, he says, may attain 103.6° F., but which was due to aseptic resorption fever and can be differentiated from septic fever, as the animal is bright and eats well in the former, while in the latter there is dullness and no appetite. But in comparison with the results obtained here, it would appear that, where the temperature ran up as high as 103.6° F., there was infection, as is illustrated by case No. IV. Here the animal was bright; but from the clot there was obtained a pure culture of *staphylococcus pyogenes aureus*. The only complication which followed his operation was bleeding, which sometimes appeared after the horse had risen. Frick thinks this is subcutaneous, and says that it does not interfere with healing unless it is abundant so as to press the edges of the wound apart and that hematomata the size of a child's head are readily absorbed.

If larger hematomata appear, the sutures should be taken

out on the fourth or fifth day, the clot removed, and the wound rinsed out once daily with sublimate solution, until healing occurs. It is noteworthy in these cases that we have healing by secondary intention, without suppuration. He castrated twelve horses, which varied in size from a pony to a very heavy draft animal, and in seven cases there was healing by primary adhesion on both sides; in two cases on one side. The remaining wounds healed by secondary intention, so in twenty-four wounds, sixteen healed by primary adhesion, or sixty-six two-thirds per cent; but from the results obtained in our operations it seems that it would decrease the danger to use boiled or distilled water to wash the scrotum before making the incisions, and also to wash away any blood after the testicle is exposed, and thus not allow any of the sublimate solution to enter the peritoneal sac of the scrotum, which would increase the danger of infection with the pus producing organisms (7), as the sublimate would act as a chemical irritant and produce the death of the adjacent cells, which would be a medium for bacteria to live upon until they gained a foot-hold and as the sublimate would combine with the albumen of the tissues and form an albuminate, it would not have any inhibitory action upon their growth; while if such a few obtained entrance without the sublimate solution, the living cells would be able to overcome them and we would have practical sepsis.

Of the thirteen cases operated upon here, ten healed by primary adhesion on both sides and one on one side. The remaining wounds healed by secondary intention, which was much more rapid than it is by the usual methods of leaving the wound open, and in two of these wounds that healed by secondary intention, there was no perceptible pus formation. In all, there were twenty-six wounds, of which twenty-one healed by primary adhesion or eighty per cent. The only complications occurring being hematoma in cases IV and VIII. In case IV the cord was ligated with catgut, which had been preserved in alcohol and which after being applied gradually became softened by the lymph in the tissues and relaxing allowed the spermatic

artery to bleed. In case VIII, the covered operation was performed and the ligature was passed around the envelopes and the cord, but was not drawn sufficiently tight to thoroughly compress and retain the spermatic artery. The ligation over the inner envelopes in the covered operation would be practical in yearling colts and those under that age, but would not be practical, as a rule, in those older than one year.

The temperature of those animals which healed by primary adhesion did not exceed 102.4° F., as reference to the chart on pages 266 and 267 will show, and only in those cases where there was infection was there a high temperature. This would make it appear that the high temperatures reported by Frick were due either to slight infection, or to the introduction of an irritant into the scrotum in the form of the sublimate solution, and that it was not due to the resorption of the ligated end of the cord; but the time at which his high temperatures occurred corresponds to the date at which infection fever usually takes place.

In carrying on these operations, it was found best to make some changes, which appeared to be and proved more practical. The first was the use of sterile silk instead of catgut to ligate the spermatic cord.

The use of silk to close the scrotal wounds was also found best. This was used both as interrupted and continuous sutures. The interrupted suture was found to give the best results, as it was only with the continuous suture that there was any infection, though there were a number which healed by primary adhesion, where the continuous suture was used.

The use of some agent, such as wound gelatin, to apply to the wounds after operation was performed was found to be much more convenient, as it does away with the necessity of applying antiseptics to the scrotum daily until healing occurs. There may be other agents, which would answer the same purpose. The requirements are:

A substance which can be applied to a moist surface and will stick, and when dry it must be flexible and not crack when

bent. The agent in itself must be sterile and capable of remaining so. The method of ligation of the spermatic artery which was performed in the last three cases deserves still further trial, as in two cases there was very little swelling, practically none. In case XII there was considerable swelling, but this can be accounted for by the accident caused by removing the animal from the table before it was able to stand. The principal reason to recommend this method is that we introduce a smaller ligature and cause the death of a less amount of tissue, which must be resorbed.

The objection raised to the performance of the aseptic operation in private practice is that it is not practical and that it requires a skilled operator and great care in reference to technique. The objections can be refuted by reference to the condensed table on pages 266 and 267. This gives the previous experience of the operator in castration, the previous experience with the aseptic operation, the mode of operating and the results obtained. By reference to this, it will be seen that nine different men operated during this series of observations, six of whom had not castrated an animal before, and yet every one of these obtained healing by primary adhesion.

It would appear that if the operation could be carried out successfully by an inexperienced student, that it would be practical in private practice, especially with a surgeon, who has become skillful in the manipulation of the testicle, and who has a thorough knowledge of aseptic surgery. The operating table was used as the method of restraint in connection with the use of a general anæsthetic in these cases, though it would appear that casting an animal upon clean, green turf would be as successful, but the general anæsthetic is almost a necessity to obtain practical antisepsis.

With the present methods of operating, and after treatment of the wounds, the veterinarian cannot expect to obtain any better results than the empiric, who uses the same methods and can do the operation for a much smaller fee than the veterinarian.

It is only under such conditions as will lessen the dangers of it that the veterinarian can expect to command this important operation with proper compensation.

I think that the conclusions that can be drawn from the results of this series of operations are :

First.—The aseptic operation is a practical success in the clinic.

Second.—It would be a practical success in private practice.

Third.—By aseptic methods, we lessen the dangers of castration, and should therefore be able to command these operations.

Fourth.—With our present knowledge of bacteriology, we owe it to the veterinary profession and to our clients, that we should perform all operations by antiseptic methods.

In closing this paper, I would like to acknowledge the assistance received from Profs. W. L. Williams, James Law, V. A. Moore and Mr. R. C. Reed.

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BY AN ACT OF THE NEW YORK LEGISLATURE the veterinarian has been promoted in rank in the National Guard of that State. A squadron is now entitled to two veterinary surgeons, one ranking as first lieutenant and drawing the pay of that grade when in the State service ($150 per month, finding his own horse and uniform), and the other bearing the title of veterinary sergeant, and drawing $23 per month. While not what the veterinarian deserves, it is quite an advancement over his former neglected position.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

WHAT IS THE PATHOLOGY OF JAUNDICE?

By FRANCIS ABELE, V. S., Quincy, Mass.

An old carriage mare that had been a pet in a wealthy family for many years, had jaundice. She was supposed to be twenty-three years old.

Her bowels were constipated, fæces were hard, pellets covered with a tough mucous film, color not clayey but almost a red. She refused to eat, not even touching hay or water. She was extremely weak, her hind legs would "tangle up" worse than a horse with azoturia. The mucous membranes, especially of the mouth and the sclerotic coat of the eye, showed a rich saffron color. Was sent for one time in haste, as she was dying. Found her down and in pain. Helped her up by her tail. Gave her laxatives, with calomel, followed by tonic powders of magnes. sulph., nux vom., and fer. sulph. In other words, I gave our empirical treatment of laxatives and tonics.

What was the matter with that mare? You may say jaundice. What is jaundice here? Is it congestion, inflammation, scirrhosis or rupture? If either, how did resolution act? These were the questions that came to my mind, and I said, how little we know about the liver.

About two years ago, diagnosed a case as chronic jaundice. Horse had been unable to work for seven or eight months. Was quite old. Called Dr. Burchstead in consultation. Do not recall the exact treatment, but patient got to work inside of two weeks and is still working, and looking well. What was the pathology of this case? What changes did our treatment produce? I will gladly attend their funerals to find out. Will I then know, or will they die like many criminals, whose death refuses to divulge their secrets?

OBSTRUCTION OF THE ŒSOPHAGUS IN A PUPPY—PERFORATION—ESCAPE OF LIQUID FOOD INTO THORAX.

By RALPH C. JENKS, D. V. S., Brooklyn, N. Y.

One evening in the early part of June, a gentleman brought to the office a two-months old fox terrier puppy, suffering for

the past three days with choking symptoms, efforts at coughing and gagging, with abstinence from food and water, and frequent outcries of pain. As he partook of no food, gruels, beef tea, and milk had been administered with a spoon, as also had the syrup of buckthorn. No knowledge was possessed by the owner as to the condition of his bowels. For twenty-four hours prior to consulting me, he had shown evident distress in breathing, and for this reason pneumonia was suspected, and he sought advice.

Examination of the patient revealed a very weak and fluttering heart-beat, temperature 103, undoubted hydrothorax, and great pain somewhere near the entrance to the chest. Saliva was dripping from the mouth, and the head was extended upon the neck. Lifting the little fellow by catching him at the elbows caused him to cry out with pain, or when standing he would frequently evince pain when he would bend his neck or body. He was extremely weak, staggering, and when putting weight upon a leg the lower portion (from the carpus and tarsus to the toes) would rest upon the floor.

No difficulty was found in making a diagnosis of foreign body, but its location and connections were uncertain. Differential diagnoses were made with pleurisy with effusion, pneumonia, and organic heart disease.

As death was impending and the patient suffering acutely, my advice to end his misery was readily agreed to. An immediate post-mortem revealed the presence in the thoracic portion of the œsophagus of a triangular chicken-bone, with sharp projections, one of which had penetrated through all the coats of the œsophagus and entered the thoracic cavity, through which opening all the liquids that were forced into his unwilling mouth passed, until the cavity of the thorax was two-thirds full, the heart being entirely submerged, and the lungs pumping away in this conglomorate mass. The specimen, with the bone *in situ*, was placed in a bottle of alcohol as evidence of a most peculiar accident and complication.

"REPORTS OF CASES" is a department of the REVIEW which can be made the most practical aid to veterinarians. The profession is always solicited to employ it as freely as they wish. It is singular that it is not overrun with interesting case reports. Utilize it during the dull summer months and thus help your profession, your brethren, and yourself.

EXTRACTS FROM EXCHANGES.

FRENCH REVIEW.

ACUTE HYPERTROPHY OF THE MYOCARDIUM OF GLANDEROUS NATURE [*By Mr. Berton*].—This is the case of a gelding, which, laid up on suspicion of being overworked, exhibited suddenly serious symptoms of cardiac disease: "elevation of temperature, anorexia, prostration, œdema under the sternum, abdomen and in the extremities, cyanosis of the conjunctivæ, weak pulse, cardiac beatings strong, loud and accelerated," etc. After a few days, however, manifestations of glanders became well marked, and the animal was destroyed. At the post-mortem, besides the ordinary glanderous lesions of the respiratory apparatus, it was found that the heart was at least one-third larger than ordinarily, its walls being considerably thickened. On section the myocardium is like being infiltrated, its fibres are separated by dark lines running in all directions. This condition is principally noticed in the ventricles. The author says: "If since a long time the infectious origin of many myocardites is known, cases are rare where glanders occurs under that form."—(*Receuil de Med. Vet.*)

TRIPLE GEMELLAR GESTATION WITH MONSTROSITY [*By Mr. Haus*].—A Dutch cow, five years old, was delivered of three living heifers. The accouchement was normal, and accomplished without difficulty. The first and second subjects were in the vertebro-sacral position and delivered without effort. The third was in the lumbo-sacral position, with the left anterior leg entirely engaged in the pelvis. After the third delivery, a round mass, as big as a duck's egg and covered with hairs, was thrown out of the vagina. It was an Anidian monster. The three heifers are of the same size, about the same weight, are normally formed and in good health. The delivery of the cow took place twelve days before the expected date.—(*Receuil de Med. Vet.*)

TO PREVENT INFECTION OF WOUNDS.—According to Prof. Galtier, of Lyon, "If fresh wounds, even the most superficial, such as simple abrasions, scratches, are easily infected when they come in contact with virulent substances, it is easy also to protect them and prevent infection by covering or cauterizing them with some agent, such as bichromate of potassium (in solution), phenic acid (in emulsion), ordinary tincture of iodine, perchloride of iron, nitric acid and nitrate of silver, tincture of

iodine (double strength); the first four are sufficient for superficial and the others are principally indicated for deep wounds. Those agents protect the wound against infection in preventing absorption and in acting more or less on the virus. The difficulty of success varies with the depth of the wound; altogether superficial ones become infected oftener, but they are more easily preserved. At any rate, nitric acid, nitrate of silver and double tincture of iodine, must be preferred under all circumstances as acting more thoroughly and more surely.—(*Journ. de Zoötech.*)

A Case of Tracheal Difformation (Flattening) in a Mule [*By Mr. A. Pleindoux*].—Eight years of age, and of large size, this animal was a confirmed roarer. Six months previously the symptoms were very mild, but little by little they increased in severity and now he roars in walking, and if put to work or to trot, he is threatened with asphyxia. Supposing that possibly the condition was due to the lesion most ordinarily met with, viz., paralysis of the larynx, laryngotomy was decided upon and performed; but after release from the operating table and, though he had the ordinary temporary tracheotomy tube, the mule continued to roar. Taking out this tube and exploring the trachea downwards, the author found that the diameter of the organ was gradually diminishing in size. The mule, growing rapidly worse with this difficulty of respiration, was killed a few days after. At the post-mortem the trachea was found flattened from forward backwards in its lower half. The cartilages were very flexible, and, instead of overlapping each other, their extremities were separated from each other from four to five centimeters. The antero-posterior diameter was scarcely 15 millimeters, the transversal 6 centimeters. The interannular ligaments were torn and the muscular coat of the trachea, loose from the inner face of the rings, and forming folds in the cavity of the trachea, reduced its calibre.—(*Journ. de Zoötech.*)

Sudden Death by Subarachnoid Hæmorrhage of a Stallion During Copulation, Suffering with Tricuspid Insufficiency.—In the *Revue Vétérinaire*, Mr. Scoffié relates this case of the death of a seventeen-year-old stallion which occurred during copulation, and at the post-mortem, besides hypertrophy of the heart and disease of the tricuspid valve, a hæmorrhage was found on the superior face of the posterior part of the bulb. On dividing the dura mater, a clot was found back of the calamus scriptorius, between the visceral layer of the

arachnoid and the external face of the pia mater. In conclusion, Mr. Scoffié says: (1) Stallions ought to be carefully examined, not only in relation to the lesions and blemishes that may be transmitted, but also with the object of detecting cardiac lesions or others which may endanger their lives; (2) Copulation must not be allowed during the process of digestion, which is specially favorable to vascular ruptures on account of the pre-existing bloody hypertension.—(*Revue Vétérinaire.*)

CLINICAL OBSERVATIONS.—Continuing a habit seldom followed by American veterinarians, Prof. Labat, of Toulouse, related these interesting practical cases in the *Revue Vétérinaire:*

(1) *Cysts of the Spermatic Cord.*—This horse had been successfully castrated and three months and a half after was suffering with a large swelling of the scrotum and inguinal region of the right side. By careful examination of the parts, condition of the cord by rectal exploration, a diagnosis of champignon was at first entertained, though the mobility of the mass, its puffy consistency, etc., might suggest another lesion—perhaps an epiplocele. At any rate, surgical interference was decided upon and the animal submitted to operation. The manipulations revealed that it was the spermatic cord which was diseased, but instead of finding the ordinary champignon, it was an ovoid mass, the size of a turkey's egg, in which the cord—soft, puffy and infiltrated—contained several cysts of various dimensions, one as big as an almond, another the size of a large marble, two others as big as peas. These cysts were lodged in the interstitial connective tissue, their membrane or envelope was thin and white, their inner surface smooth and their liquid contents citrine and clear. Recovery of the animal followed rapidly.

(2) *Chronic Inguinal Epiplocele, following Castration.*—This horse was castrated six months ago, and the wounds of the operation healed well with the exception that on the left side there remained a little fistulous tract, from which pus was oozing. A swelling of the region soon occurred, and the owner applied to the school of Toulouse for advice. The left inguinal region is occupied by an ovoid tumor, painless, not œdematous, in the centre of which is a fistula. Rectal exploration shows the superior inguinal canal dilated, not lacerated, with a thick cord running through it. This is evidently adherent to the bottom of the cicatricial tissue and the skin. Chronic inguinal hernia is diagnosticated and this is due to a portion of the great omentum. The hernia cannot be reduced and the animal is

operated upon. After careful dissection of the tissues surrounding, carefully saving the hernial sac, this was opened and the portion of the omentum exposed and found thoroughly adherent to the spermatic cord; both were removed in a mass with the ecraseur; the walls of the hernial cavity were brought closely together and a ligature of antiseptic silk applied as high as possible near the superior opening of the inguinal canal. The mass of tissue below the ligature was excised and the wound dressed with pads of oakum dipped in camphorated oil, held in place by four strong sutures. After four days these were removed and the wound left to cicatrize as one of castration. Radical recovery was complete after three weeks.

(3) *Gangrene of the Penis.*—This is a case somewhat similar to one published some years ago in the REVIEW, in which an empiric being called to castrate a stallion, found but one testicle, removed it and mistaking the penis for the other gland applied wooden clamps upon it. Gangrene set in and a long piece of mortified penis had to be amputated. The wound granulated and it was hoped that the ejection of urine might give rise to the formation of a permanent fistula, large enough to take the place of a natural urethra. But by degrees the wound began to contract and free incision had to be resorted to on two or three different occasions. The author was very anxious to perform urethrotomy and try to make a permanent opening below the ischial arch, but the owner would not consent and the horse changed hands.

CORRESPONDENCE.

BRIBE-TAKING BY VETERINARY SURGEONS.

Editors American Veterinary Review:

DEAR SIRS:—A horse dealer who has been sojourning in New York City during the past spring, where he disposed of a large number of high-class horses at private sale, was narrating his experiences the other evening in a large hotel to an audience of gentlemen, including myself, when he bitterly assailed the veterinary profession of Gotham, describing its members as "a lot of suckers." He said that in almost every instance where one of his horses had to be examined for soundness he was compelled to fee the examiner in order to have the horse passed, and that in two instances the veterinarians had schedules of the amounts they demanded, as governed by the price of the horse. He further said that, on airing his complaint of the practice to

other dealers, he found that they accepted the situation philosophically, and always made provision in the price asked for the horse, so as to be in position to meet the demands of the surgeons.

An attempt upon my part to defend my profession by saying that the practice was not general, but confined to a very few of the lower class of the members, was met by the emphatic statement that in his experience and that of other dealers with whom he conversed, it was exceptional to find a veterinarian who would refuse the proffered bribe, and not uncommon to find men who would "brace" the dealer for it before undertaking the examination, and "raise the ante" when some unsoundness was to be passed over and a clean certificate given.

As I had recently entered the profession and been surfeited by the professors of my alma mater with lofty ideas of professional ethics and the honorable science of veterinary medicine, this fell upon my ears with pain and discouragement, and I refused to believe it, and so appeal to you, Mr. Editors, who are upon the ground and must know the methods in vogue in New York, for refutation or verification of the scandalous charges detailed above. In the city where I practice, if such disgraces do exist, it is certainly not so general as described by my informant as maintaining in the Empire City.

If you confirm the report of this dealer, I tremble for the future of veterinary medicine, for sureiy no honorable calling can be enduring when characterized by such disgraceful acts. It strikes me that a man guilty of such an act should be precipitately kicked out of every professional organization with which he has the effrontery to associate himself. I do not see how any honorable man can work in the interest of and for the protection of his client and then accept money from the other side. No honest man can work for two masters.

Awaiting your reply, I remain, with good wishes for the continued success of the REVIEW,

A POOR BUT HONORABLE VETERINARIAN.

Replying to the serious charges or criticism of our correspondent, the REVIEW has no hesitation in saying that he has been imposed upon by his informant—at least in so far as generalities are concerned. It is not the exception to find honorable veterinarians in New York City; but on the contrary, the great body of the profession in this city are men of integrity, honor, and dignity, far above the disreputable practices charged by the dealer who has apparently had such an unfortunate experience. Men of such character may be found in the veterinary profession, and in every other calling, including the ministry, and they permeate the profession probably equally in all large cities; but when any individual assails the veterinarians of New York City as a class with such broad charges as conveyed by our correspondent, he does so without knowledge of the facts with which he is dealing.

There are undoubtedly veterinary sharks swarming about the sale marts, working in unison with the dealers, who encourage them in the nefarious practices, because legitimate practice does not yield them the amount of returns they require or desire, and with absolutely no moral sensibility or pride, they become the moths that live upon the reputation the profession has gained through the efforts and honorable principles of its true members. They do not represent the profession any more than barnacles upon the bottoms of vessels do the materials from which the hull is made. The chief difference is that periodically the shipmaster dry-docks his vessel and scrapes off the barnacles, while the profession permits them to remain until their worthlessness causes their own decay, when they drop off and pass out of sight. That some veterinarians of the Metropolis occupying honorable positions in the profession are known to be recipients of dealers' dollars should not be discouraging to the younger members of the profession. Let them begin and pursue their careers untrammeled by such a loadstone about their necks, for once the fatal step is taken that dealer who gave the bribe has the recipient in his power, his self-respect is gone, and if a man of honor he must feel ashamed to look his brethren in the face. No veterinarian known to have received money from a horse dealer for the purpose of influencing his decision in the examination of a horse should be eligible to membership in an association of veterinary gentlemen, and any member of such an organization against whom such a charge can be sustained should be relieved of his certificate of affiliation without ceremony.

But when any man assails the profession of New York City as a body in the manner that our correspondent's informant has, we reply simply that he wilfully or ignorantly lies.

EXAMINATION OF HORSES FOR SOUNDNESS—LIABILITY FOR CONDEMNATION UPON "SUPERFICIAL" EXAMINATION.

BROOKLYN, June 11th, 1898.

Editors American Veterinary Review:

GENTLEMEN:—Your comments in the current issue of the REVIEW, on the subject submitted to you by Mr. Clarence H. Robbins, of this city, in reference to the liability or non-liability of Dr. Ackerman in a civil action, either evades the question, or you have misconstrued the point at issue. Kindly refer to the "query" on p. 198, and particularly to the quoted portions thereof, and you will find no reference to "malicious" or "prejudiced" action on the part of Dr. Ackerman, which you claim must be the basis for legal action.

As you say, the matter has gained considerable professional notoriety, the vital question at issue is,—Dr. Ackerman, in his certificate having pronounced the animal "unsound at both ends," and that upon a "superficial examination,"—therefore, *Query:* "Is not any veterinary surgeon legally liable to the consequences of certifying to the unsoundness of an animal, while admitting in that certificate that same is done upon a "*superficial* examination"?

This is the vital point to the profession at large.

Trusting that this will not be too late for publication in the July issue of the REVIEW, I am, Yours truly,

L. MCLEAN, M. R. C. V. S.

The comments in the June REVIEW anent the subject referred to by Dr. McLean were based upon the general pecuniary responsibility of an examiner for the contents of a certificate issued by him detailing the results of his examination of a horse for soundness, and the views there expressed are those held, we believe, by almost all men familiar with veterinary jurisprudence. Since, however, our correspondent insists that the real question involved in the original query is the apparent carelessness of the examiner in rendering a judgment of unsoundness, we renew our remarks based upon this aspect of the case. ust here we will lay aside the individuals concerned in the controversy, and discuss the question simply on the point submitted. The subject is practical, and its ventilation must prove of interest and profit to the profession. We believe that our correspondent. who is avowedly a painstaking and conscientious examiner, has condemned many a horse upon a "superficial" inspection; but we do not think he ever passed one in that manner. For instance, if an animal were submitted to him for professional opinion, and his first observation led him to believe that the horse was 'shaky" in its knees; or if a lateral view revealed the presence of a curb, or that he was knuckled, or that he possessed any other defect or deformity which his experience and knowledge had taught him to reject, the animal would be condemned without putting it through the details of a minute examination. On the other hand, if a "superficial" examination failed to reveal the presence of such conditions, he is in duty bound to pursue his investigations in quest of defects of a less patent character; and, it is only after exhausting every means in his power to find evidence of ill condition, that he can conscientiously certify to his belief in the soundness of the subject. In the case in question the examiner declares in his letter to the buyer that as he stood looking at the subject he observed a weakn ss of the knees sufficient to cause him to consider the horse unsound "at that end." What he discovered at "the other end" to produce a similar verdict is not made plain, but he became satisfied of that fact enough to cause him to submit such an opinion in writing. Now the question arises in the case of the first objection, whether a "superficial" examination was not all that was necessary If such a condition really existed, it strikes us that he was just as competent to observe it superficially as upon a minute examination. And the same would apply in the detection of knuckling. curb, or the presence of lameness, and many other conditions. If they are seen at the first glance no amount of careful work can secure the examiner's approval, and the horse had as well be condemned as to waste any further time upon the case, for he is rejected from the beginning. We, therefore, hold that a veterinary surgeon is justified in many cases in condemning a horse upon "superficial examination," and adhere to our contention, that the burden of proof to do injury or injustice from malice or prejudice must be against the examiner as a basis for legal action.

THE ATTITUDE OF THE PRESS TOWARD THE VETERINARY PROFESSION.

NASHVILLE, TENN., May 23, 1898.

Editors American Veterinary Review:

DEAR SIRS:—It is the function of the daily press to instruct the people in all branches of science and all forms of knowledge as well as gather and condense news for them and advance their political and social interests. Thus to particularize it is a matter approved of by all veterinarians to see the people informed on such veterinary matters as can be presented in a shape easily understood by them. The public learn thus to have more respect for them and to feel sensible of the work which the veterinary profession is constantly struggling so earnestly to accomplish. Especially is it well to frequently call the stock-owners' and

raisers' attention to the sanitary and hygienic rules which should govern every stable and stock farm.

Indeed, it is more and more the endeavor of veterinary medicine to prevent disease by preventing the violation of nature's laws, and when the press lends its great influence to the more silent but earnest exhortation of the veterinarian, as he goes from barn to barn on his mission of mercy, the feeling implanted would not be that of meddling, but would impress the reader that assistance and comfort were being given his animals.

But to our most sincere regret this is not always the attitude of the press towards the profession. It is by no means a rare thing to see a paper heaping ridicule on ridicule on the whole profession, either because of the unfriendly feelings of a few or because of some personal prejudice of the editor. Besides the injustice to the qualified veterinarian, utterances in which "quack," "fakir" and similar terms figure largely, we think that much injury is done to the public.

There are many people, principally among the poorer classes, who are at best quite sceptical as to the merits of veterinary medicine, and if their scepticism is strengthened by editorials and squibs derogatory to the veterinarian it may readily occur that the practitioner will find himself helpless because of the want of confidence of his client and the half-hearted way in which his instructions are carried out by the attendants. Sometimes these strictures are more due to thoughtless writing than to a desire to harm or impede the progress of veterinary science. But let the editor imagine himself describing or criticising his own veterinary surgeon and perhaps he would alter his words in such a way that they would leave a milder and more exalted impression for the veterinarian. For those who do really and truly mean to do harm we can only say that much harm is done to the public as well.

When an individual commits a wrongful or unprofessional act or a crime, scourge and scorn him as he deserves, but not the whole profession—the good and bad alike.

In this connection we might mention a frequent custom of the press which often produces wrong impressions on the public and leads to injurious consequences—the printing of the treatment of diseases. No two cases are alike in every particular, thus though the plan of remedy recommended may prove beneficial in some cases it may result in much harm in others. Teach the people the laws of health, urge them to obey the laws of veterinary hygiene, persuade them that certain diseases

are transmitted by contagion and infection, and that such patients must be isolated; in short, teach them to obey the Board of Health and other sanitary authority. But do not attempt to prejudice them against the veterinarians that may in the course of events be called to treat their domestic animals.

Very truly,

GEORGE R. WHITE, D. V. S.

BIBLIOGRAPHY.

PRACTICE OF SURGICAL THERAPEUTY OF DOMESTIC ANIMALS. By P. J. Cadiot and J. Almy. (Traité de Thérapeutique Chirurgicale des Animaux Domestiques.) Vol. II. Published by Asselin and Houzeau.

This completes the work undertaken by the authors. The first volume was issued a little over two years ago, and treated of general surgery, of diseases common to all tissues, and to the extremities. The second volume has for its object the diseases of regions, and is divided into sections, subdivided into chapters. The first section, treating of affections of the head, includes those of the cranium and its contents; of the horns, vertebral column and spinal cord, the eye and its annexes, the ear, the Eustachian tubes and gutteral pouches; diseases of the nose, nasal cavities and tissues; those of the jaws, mouth, pharynx and salivary glands. Among all these, the chapters on dental cysts, traumatisms of the eye, tumors of the nasal cavity; of the tissues and of the pharynx, with the special interference that they demand, deserve attention. The second section treats of the traumatic and inflammatory affections of the neck, of the diseases of the thyroid gland, of the larynx, trachea, and œsophagus. In the third section are found the diseases of the withers, back and loins in one chapter; then follow the surgical affections of the chest. This last forms one of the most interesting of the work. The fourth section treats of the affections of the abdomen and of its contents. The inflammatory and traumatic lesions, hernias, diseases of the anus and rectum, of the urinary apparatus, of the genital organs of males and females. In this section the chapter on hernias, that of cryptorchidy, on ovariotomy, deserve special attention. The fifth section is short. It contains only one chapter, in which traumatisms, tumors, parasitism, aneurism, etc., are treated. Amputation, caudal myotomy and neurotomy are also presented to the reader. The sixth section is devoted to the foot, diseases of that part of the extremity in solipeds, in bovines, sheep, dogs, pigs, cats, and even birds form a number of interesting chapters, which will be read with much interest.

This concise mention of the work is insufficient to give an idea of the value of its contents. But a careful perusal of its 900 pages, the complete description of the diseases, the simplicity of the processes of operations, the positiveness of the elements of diagnosis and of the therapeutical indications, all will point out the value of the work as one of the best of its kind in veterinary literature. Like that of Lanzillotti-Buonsanti, to whom we have alluded in a preceding issue of the REVIEW, the bibliographical information presented by the authors is most complete and shows the amount of research this second volume has imposed on Prof. Cadiot and his worthy assistant, Mr. Almy.

In this second volume there are no less than 419 plates inserted in the text. These are of great value, and must have involved the publishers in heavy expense. The make-up, the printing, all, in fact, is worthy of the good old French house, from which most all of the valuable veterinary works are issued. There is no doubt that the completion of the work constitutes a valuable acquisition, up to date, to veterinary surgery and that it will meet at the hands of the profession the credit it deserves.

SOCIETY MEETINGS.

UNITED STATES V. M. ASSOCIATION.

At the hour of going to press with the July REVIEW the programme of the annual meeting, which takes place in Omaha, Neb., on Sept. 6, 7 and 8, had developed very much more completely than at a similar date last year.

Meat Inspection will be discussed under the following headings: "Reasons for Meat Inspection," by Dr. C. A. Cary; "Methods of Educating the Public as to the Importance of Meat Inspection," by Dr. W. Horace Hoskins; "The Necessity of Consolidation of Municipal Slaughter-houses into Large Abattoirs under Municipal Control," by Dr. Leonard Pearson; "Slaughter-house Inspection," by Dr. Thomas J. Turner; "Retail Market Inspection," by Dr. Charles W. Heitzman.

A considerable number of specimens illustrating diseases in food animals has already been secured and members interested in this subject will doubtless have an opportunity to see and examine a larger variety of pathological tissues and abnormal conditions of animal flesh than has ever been collected before in this country. This feature of our meeting will be worth the

cost of the trip to Omaha to members interested in this subject. If the resident secretary and other members in each State and Territory would present the importance of this discussion on Meat Inspection to the State Sanitary Boards (medical and veterinary) of their respective States, the Boards might be led to send representatives to take part in the discussion.

Papers are announced as follows:

"A Study of the Healing Process in Ovarectomy in Cows," by Dr. M. H. Reynolds.

"Practical Points in Country Practice," by Dr. S. S. Whitbeck, Decorah, Iowa.

"Diseases of Dogs," by Dr. H. D. Gill.

"The Control of Hog Cholera, especially in Minnesota," by Dr. M. H. Reynolds.

"Acute Indigestion in the Horse," by Dr. Roscoe R. Bell.

"A Radical Operation for the Cure of Contracted Hoof," by Dr. C. C. Lyford.

Other papers (titles not announced) will be presented by Drs. James Law, Tait S. Butler, C. A. Cary, A. J. Anderson, and others.

Clinical Demonstrations have beeen promised of

"Caudal Myotomy," by Dr. H. D. Gill.

"Extraction of Teeth and other Dental Operations," by Dr. L. A. Merillat.

"Ovarectomy in the Mare and other Animals," by Dr. W. L. Williams.

"Casting and Confining Animals," by Dr. T. S. Butler.

The Entertainment Programme, while not complete, promises a round of pleasant social functions that will occupy almost every hour that is not spent upon the regular work of the convention. From the efficient Chairman of the Committee, Dr. A. T. Peters, of Lincoln, Neb., we have received the following outline of their arrangements:

"The Millard Hotel has been secured for headquarters of the association; also their large assembly hall where the meetings will be held. On Monday evening we have an entertainment for the gentlemen from abroad. On Tuesday morning, after the President's address, tally-hos will take the ladies through the city and to the Exposition grounds. On the evening of September 6th there will be a reception tendered to the officers of the U. S. V. M. A. and their friends and visiting officers. There will be music and light refreshments in the parlors of the Millard Hotel. On Wednesday morning the ladies of the Nebraska

Association will take the visiting ladies through the principal stores of the city. In the afternoon there will be trolley cars to take them through the city, South Omaha, Council Bluffs. In the evening of September 7 there will either be a theatre party or some suitable entertainment, the managers of the theatre not knowing at present what play will be there. On Thursday the association will adjourn, if possible, about three o'clock in the afternoon and the entire association will take cars to the Exposition grounds. We have arranged for a large building in which to hold our clinics. Dr. G. R. Young, of Omaha, has been made chairman by the local committee and has this in his charge. Every member of the Nebraska Association has been notified to secure interesting specimens for operation, and the clinic is only a block away from the hotel, and it is contemplated holding a clinic every morning from 8 to 9.30, before the general session opens. Another feature of interest is that members attending the association will not have to leave the building for noon-day lunch as that has been provided for. This will greatly facilitate the work of the association. Any suggestions which you give will be gratefully received. We have a Bureau of Information, of which Dr. Ramacciotti, of Omaha, is chairman. It will be located on the ground floor of the hotel, and will give all necessary information and make announcements. It will give all information in regard to the Exposition, city, State, and regarding time tables of the railroads. There will also be a reception committee, consisting of Dr. Everett and myself. I think we are getting things in good running order, and I hope you can help us bring out a large delegation."

Railroad Fares.—The Western Passenger Association announces a one-and-one-third fare for the round trip from all points within its territory. and from the eastern terminal points as follows: Chicago, $20; St. Louis, $17; and St. Paul, $15.75. The Central Passenger Association makes an open rate of 80 per cent. of the first class round trip fare, from the territory east of the Mississippi River, north of the Ohio River, and as far east as Buffalo and Pittsburg. From the last points named east to the Hudson River, the territory of the Trunk Line Association, a rate of one and one-third fare on the certificate plan has been granted.

It is expected that by a concerted effort all the Eastern members will form a party, possibly sufficient to fill two coaches, and journely pleasantly together to Omaha.

CHICAGO VETERINARY SOCIETY.

Meeting called to order June 9th by Dr. Walker, President, who stated that he had been unable to see the directors of the Chicago St. Andrew's Society in regard to the rental of the clubroom we are now occupying. He promised to see them before the October meeting.

The report of the Treasurer showed $14.03 in the treasury. No report from the Secretary.

The regular programme was then taken up by

DR. GRIINER'S PAPER.

Mr. President and Gentlemen :

My subject for this evening is an extensive one and I am afraid that I am not able to give to each the attention it should have, but if I can only arouse a lively discussion on the different diseases, among my fellow-members, I shall be very grateful. The essay is confined to the foot, and includes low ringbone, side-bones, coronitis, calks, quarter-cracks, toe-cracks, navicular arthritis, keratoma, contraction, laminitis, corns, dropped sole, thrush, seedy toe, canker and quittor.

Low ringbone is a disease affecting the distal interphalangeal articulation (or coffin joint); it appears as an exostosis generally on the anterior of the limb at coronet, but may appear somewhat laterally and generally involves the whole joint. Whether same causes lameness or not, I would consider the animal unsound. We may find some enlargement on the os corona, not involving the joint, also called false ringbone ; this I would not consider an unsoundness.

Side-bones are ossifications of the lateral cartilages when they become hard and unyielding and found on the postero-lateral aspect of the foot. There is generally very little lameness present. Would consider it an unsoundness.

Coronitis or villitis, inflammation of the coronary band, not very often met with, recoguized by heat, pain and fullness of coronary band, is an unsoundness.

Calks, or treads on the coronet, received from the animal stepping on himself with shoe on opposite foot ; the injury may be slight or very grave ; unsoundness would therefore depend upon injury to the part.

Quarter-cracks are splits or fissures on the hoof occurring at the quarter and mostly found in front feet ; they may be superficial or deep. When deep there is a complete fracture of the crust extending into the sensitive lamina, in which case I

would consider it an unsoundness; when same is superficial, however, the horse may be considered sound.

Toe-cracks may be considered under the same head as quarter-cracks, the difference being the cracks occurr at the toe. If same extend through the full length of the hoof, I would call it an unsoundness.

Navicular arthritis is a disease of the navicular joint. Opinions differ some in regard to the point of origin, some place it in the perforans tendon, others on the gliding surface of the os navicular, and still others say positively it originates in the synovial bursæ, but that matters but little and if the examining veterinarian's diagnosis is correct he need not hesitate in pronouncing the animal unsound.

Keratoma, also termed keratopholocele, develops generally on the inner and anterior extremity of the wall of the toe at the white line and may extend as high as the coronet, leaving a marked depression on the pedal bone. This is an unsoundness.

Contraction is a name applied when hoofs become narrow at the heels, and is often associated with thrush and navicular-arthritis. This is in my opinion an unsoundness.

Seedy toe may be termed localized laminitis. The wall becomes detached from the sensitive lamina, leaving a cavity, where we find a mealy deposit. It may appear at the toe or the quarter. For slow work such a horse may be all right, but I would be inclined to pronounce him unsound.

Corns are located at the bars or heels of the foot. If a bruise it is termed dry corn, if suppurating a suppurative corn, involving the sensitive lamina, mostly seen in the front feet. A suppurative corn is an unsoundness.

Thrush is a disease confined to the commissure of the frog, mostly seen in hind feet. If seen in front feet look for some other disease. If front feet are affected I consider it an unsoundness, if hind feet, not.

Laminitis, also known as founder, is inflammation of the sensitive lamina; whether the disease is acute or chronic, animal should be pronounced unsound.

Dropped sole generally occuring from the effects of laminitis, is a condition where the sole descends and part of the os pedis rotates downwards. Such an animal may perform slow work, but is unsound.

Canker is a morbid growth affecting the sensitive sole, frog and walls. It is a chronic proliferation of the papillæ of the

rete, producing a bad swelling, greasy yellowish-gray fluid and is an unsoundness.

Quittors are fistulous tracts, usually opening at the coronet. We also have cartilaginous quittors affecting the lateral cartilages sometimes the subcoronary tissue only is involved, but there may be several fistulous tracts all involving sensitive laminæ. This is in my opinion an unsoundness.

DISCUSSION.

Dr. Quitman: In speaking about corns, the essayist remarked that a suppurating corn was decidedly unsound, but avoided corns in general. Does he consider a horse that seems to have corns but does not go lame as unsound?

Dr. Grüner: I mentioned dry corns. I did not state whether they are sound or not. If removable the horse may be called sound. I would not consider nor pass any one as sound on account of it being hard to keep shoes on horses with corns.

Dr. Baker: I would like to know as to whether in the absence of any soreness a veterinarian is justified with the view of simply looking for them to pare away the hoof in the seat of corn, assuming that there were no indications creating suspicion that there were any. I know some practitioners do make it a practice to pare away the hoof with this object in every case. If he finds a discoloration he condemns the horse.

Dr. Quitman: I would say, as far as I am concerned, in examining a horse for soundness, I invariably examine the horse for corns with a knife, paring the inner quarter and in city horses also the outer bar and sole. In my opinion, however, if a man is going to condemn a horse for corns he will have to condemn about three-fourths of the horses. Even country horses in the city will develop corns caused by the hardness of the pavement or from the difference in the stabling. It depends upon the severity of the corn whether they should be condemned. I invariably, however, examine every foot for self-protection if for nothing else.

Dr. Grüner: I would like to ask Dr. Quitman whether he takes the shoes off in making his examination—that is, if he has to examine a horse with shoes on?

Dr. Quitman: It depends upon the web and style of the shoe, also on general conditions. I often have the front shoes removed. If it does nothing else it impresses the client that I make a very careful examination. I make it a rule to point out every little blemish to the owner for my own safety. If the corn is of a deep purple color and extends deeply between the

bar and the wall I reject the horse. If, however, the horse does not show any lameness or tenderness I would as a rule pass him although he has a corn. It depends mainly upon the discoloration, etc.

Dr. Grüner: Horses shod with rolling-motion or rubber pads are as a rule unsound, and I would recommend particular care in examining such horses.

Dr. Quitman: Does the essayist consider a horse unsound having a Whitman and Barnes rubber shoe on?

Dr. Grüner: Not necessarily. I would examine him carefully, having his shoes taken off.

Dr. Robertson: I must confess that I have not been as particular heretofore in examining the feet for corns. I rely as a rule on the external conformation of the wall and appearance of the foot in general. We are not supposed, in my opinion, to pare into the sole of the foot except we have just cause for suspicion. The same as we are not supposed to go into a bowel that may be weakened from some digestive trouble. External appearances will caution an experienced veterinarian for closer examination. Then he can use his own judgment as to the horse being sound or unsound.

Dr. Campbell: Would you reject a horse with a slight corn?

Dr. Robertson: That depends upon the conformation of the foot.

Dr. Hughes: Regarding the subject of corns, something like the subject of ringbone and many other conditions touched upon, we have to use a very considerable lot of judgment in passing it for soundness or unsoundness. In my opinion corns are not produced by the shoe, but by the method of the shoeing. We hear of horses from the country that have never been shod having corns. However, this is an unreasonable statement. When a man runs across such a corn, it is merely an accidental bruise, or staining of a healthy quarter and should be considered in my opinion as sound. Any corn that looks like a long standing one should be pronounced as unsound. I would like to have the question of ringbone discussed to-night. In my opinion the subject of ringbone in examination of horses for soundness will cause more annoyance than anything else. For instance, a heavy draught horse five years old that is perfectly sound as far as his movements are concerned, when we come to examine his os corona we find on the posterior lateral aspect a marked angularity. The anterior as well as the internal lateral aspects are

smooth. Is that horse sound? I hold that a man who finds a marked angularity at that point is perfectly justified in condemning the animal, as he will have a ringbone in the future. Any one can determine a pronounced ringbone, but I would like to hear the opinion of the members, as undoubtedly they have come across such irregularities.

Dr. Baker: I think it is unjust that a horse with rough pasterns should be condemned. My experience has taught me that they are no more liable to develop ringbones than others, and therefore I think it is unjust to ourselves and to commerce to condemn a horse with rough pasterns, provided there is no thickening or other cause for ringbone. In regard to examination for corns, where there is no suspicion, I do not pare away the hoof nor do I condemn a horse with slight discoloration without any lameness.

Dr. Hughes: Regarding Dr. Baker's statement of angularity. I never condemn a horse that is all angular, but when I find a horse that has pronounced roundness of the joints and angular pasterns I say there is something wrong and I reject the horse.

Dr. Merillat: My experience regarding rough jointed horses and rough pasterns is that you will usually find a horse that has rough pasterns is not rough jointed and I fully believe that such a condition should be looked at with suspicion. I have examined more than 800 cavalry horses this last week and condemned as many as forty with these enlargements, as I considered them as absolutely unsound.

Dr. Robertson: What is your opinion as to soundness of a horse with one foot smaller than the other?

Dr. Hughes: I think such a horse should be in every case rejected, as he will sooner or later, especially in the city, go lame, and invariably on the smaller foot.

The following members have severed their connection with the society: Drs. E. Jentzsch, James Flemming, J. A. Bovett, Jr., Harry J. Stewart, D. W. McKillip, A. R. Wake, J. McBirney, R. H. Tracy, L. Clark, W. J. Stewart, C. H. Zink.

L. CAMPBELL, D. V. S., *Secretary.*

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

In the absence of the President and Vice-President, meeting was called to order June 1, at 8.45 P. M., by the Secretary.

On motion, the Chairman of the Board of Censors was voted to the chair. The following members responded to roll-call: Drs. Amling, C. C. Cattanach, J. S. Cattanach, Ellis, Gill, Lamkin, Lellman, Machan, MacKellar, O'Shea and Ryder. The minutes of the previous meeting were read and approved.

Report of Board of Censors.—Dr. Gill, Chairman, reported as follows: Whereas, at the March meeting, Dr. Huidekoper, on the impulse of the moment, unintentionally slighted Dr. Bell, by failing to recognize Dr. Ackerman in the debate, as per programme, arranged by Dr. Bell, as Chairman of the Ways and Means Committee, and Dr. Huidekoper, having recognized his error, and having made an apology to Dr. Bell, it is resolved, that the Secretary be instructed to ask Dr. Bell to withdraw his resignation as Chairman of the Ways and Means Committee. Moved and seconded that the report be accepted. Carried.

Reading of Papers.—Dr. Lellman then read a paper entitled, "Multiple Sclerosis of the Brain and Spinal Cord of a Dog," as follows:

A very interesting case of paralysis in a dog was observed by me last year. When I discuss this case it is done with some reluctance, as it was impossible for me to get the animal for an autopsy, in order to prove that my diagnosis was correct. Nevertheless there is no doubt in my mind.

In September of last year I was called to examine a dog, which according to the owner's history had been paralyzed gradually during the past six months. When taking the history of the case as thoroughly as possible, I found out the following facts: The first symptoms which the owner of the animal noticed, were an intense twitching of the muscles of the extremities when the animal got up to walk or when it became excited. During rest these symptoms would cease entirely. By and by, the owner said, she noticed the appearance of weakness in the hind legs, staggering, till finally the animal became entirely paralyzed on its hind legs; the fore legs also seemed to become weaker and not to be fully able to perform their normal function, the right front extremity more so. The dog, which was trained well and and used to know a good many tricks, seemed to have forgotten all of them entirely, but one. The owner also told me that, according to her opinion, the dog had very poor eyesight. The appetite had been fair. When asking the owner whether she noticed any irregularities in passing the fæces and urine, she told me that she never noticed any.

A thorough examination was made, the results being as follows: Male pug dog, about six years old, in abnormal fat condition, the hair being of dull lustre, the visible mucous membranes appear to be anæmic; pulse is small, irregular, beating about 100 times a minute. At the two brachial arteries the pulse appears not synchronous. Temperature per rectum is 102° F.

The heart shock is weak and can hardly be felt on the left side of the thorax. Percussion of the heart region shows an increased zone of dullness. While auscultating the heart, I find the first sound normal, while the second one is hardly to be distinguished; it appears to be combined with a by-sound almost synchronous with the diastole of the heart. This abnormal by-sound is of a somewhat buzzing character. According to my examination of the heart I diagnose insufficiency of the semilunar valves of the aorta and also a possible (dilation) aneurism. There was also most probably a dilation of the left ventricle. Percussion of the thoracic walls shows, apart from the increased dullness of the heart region, nothing abnormal. Auscultation of the lungs reveals dry bronchial râles. Examination of the digestive apparatus reveals nothing very important, except a catarrh of the intestinal tract. Disturbances in the function of the rectum are not present. Examination of the urogenital organs proves slight albuminuria and quite an enlargement of the prostatic gland.

The psyche of the animal is not free, it appears distinctly depressed, somewhat apathetic.

A thorough examination of the eyes shows considerable dilation of the pupils, partial atrophy of the optic nerves, some small calcifications within the lens; these, however, were not sufficient to cause any substantial disturbance of the eyesight.

The hind extremities are almost perfectly paralyzed. When trying to move the dog drags the extremities; the animal is unable to make any co-ordinate movements with the same. The fore extremities show commencing paretic symptoms, the right one more so.

However, there is not substantial atrophy of any muscles of the extremities and the trunk. Almost puzzling is the considerable atrophy of both temporal muscles. Every time the animal tries to move a considerable tremor of the muscles of the extremities sets in; during rest, however, it disappears altogether. While testing the sensibility of the nerves, I can hardly detect anything abnormal. On the other hand, the re-

flex of the tendons and periosteum appears distinctly increased. The hind extremities show considerably increased patellar reflex and also intense clonus of the foot (reflex of the Achillean tendon). The muscles of the posterior extremities are in a kind of tonic state. The gait of the hind extremities is paretic-spastic. The reflex of the cutis appears to be normal. Trophic lesions are not present. Disturbances in the function of the rectum and bladder are also absent. By request some milk was given to the dog; I now notice that there were beginning disturbances in swallowing. The lower lip appears somewhat flabby and is hanging down. The voice of the dog is also changed. This was told me from the owner before. Those last mentioned symptoms speak clearly for pathological alterations in the medulla, while atrophy of the optic nerves is due to cerebral alterations. The paraplegia of the posterior extremities I consider due to chronic alterations within the lateral and anterior tracts of the spinal cord.

It is easily understood, that the clinical symptoms of multiple sclerosis of the brain and spinal cord can be very variable according to the localization of those sclerotic alterations. In this case, according to the clinical symptoms, I localized the sclerotic alterations principally within the occipital lobes of the hemispheres, within the medulla oblongata, pons Varoli, and within the spinal cord from the thoracic to the lumbar region. I base my diagnosis upon the following facts:

1. Upon the slow progressive paralysis, any new formation (tumor) would have been of a quicker course and would have revealed other clinical symptoms besides.

2. Upon the condition of the whole system of the dog; upon the clinical examination of the heart, which proved to me alteration of the ascendant aorta, principally insufficiency and most probably aneurism—obesity of the heart. These reasons are strengthened by the *modus vivendi* of the animal—that is, absolutely wrong diet and lack of exercise.

The sclerosis I consider due to alterations of very fine blood vessels of the central nervous system, perhaps due to arterio-sclerosis or fatty degeneration of the muscular coat. Those arterio-sclerotic alterations are very often followed by thromboses and embolisms.

As the prognosis was very bad, I advised the owner to destroy the dog, which was done. It was, however, impossible for me to obtain the dog for an autopsy, as the owner did not want to have him cut up.

Moved and seconded, that a vote of thanks be extended to the essayist. Carried.

Reports of Other Committees.—Ways and Means Committee: Dr. Ryder, Chairman *pro tem*, stated that he thought it was the function of this committee to attend to any such arrangements as were to be made for the reception of the Veterinary Medical Society of the State in September.

Judiciary Committee: Dr. O'Shea reported that this committee had received several reports of illegal practitioners; but so far were unable to secure specific evidence against the parties accused; and until they could do so, the committee deemed it unwise to take any action in the matter, whereby the association would be laid liable. Moved and seconded, that the report be accepted. Carried.

A communication to the association was read by the Secretary as follows:

Dr. R. W. Ellis, Secretary Veterinary Medical Association of New York County, New York City:

SIR:—I have the honor to submit my resignation to the Veterinary Medical Association of New York County.

Will you please present to the members my thanks for their courtesy and my hopes for their well-being, and the success of the association. Very faithfully yours,

RUSH S. HUIDEKOPER.

Lieut.-Colonel and Chief Surgeon, care War Department, Washington, D. C.

Moved and seconded, that the matter be referred to the Board of Censors. Carried.

Moved and seconded, that a recess of ten minutes be taken while the Board could take action on Dr. Huidekoper's resignation. Carried. The Board of Censors subsequently offered the following report: "We recommend that the resignation of Dr. Huidekoper be accepted, and that the Secretary be authorized to notify Dr. Huidekoper of the same, expressing the association's well wishes for him in his new field of labor."

ROBERT W. ELLIS, D. V. S., *Secretary.*

MISSOURI VALLEY VETERINARY ASSOCIATION.

The fourth annual meeting was held in Kansas City on the evening of June 8th, 1898.

Meeting called to order by Vice-President R. C. Moore.

Roll-call responded to by B. F. Kaupp, L. D. Ryan, S. Stewart, R. C. Moore, W. A. Heck. Visiting veterinarians: Drs. S. E. Bennett, J. C. Milnes, J. S. Buckley, F. C. McCurdy, H. H. George, James Otterman, P. C. Kershner, of Kansas City, Mo., and Dr. A. B. Wilmoth, Chillicothe, Mo.

The Board of Censors reported six eligible applicants and recommended their election to membership in the Society. According to motion, the Secretary cast the ballot of the Society for the names of S. E. Bennett, J. C. Milnes, of Kansas City, W. N. D. Bird, of Arkansas City, James Kelly, H. M. Burgess and Harry V. Good, of St. Joseph, Mo., as members.

The committee on the Anti-vivisection bill was carried over.

The annual report of the Secretary and Treasurer was read and ordered placed on file. It consisted largely of data from the records of the association from its beginning to present meeting. It was shown that there were thirty-one regular and six honorary members. The association had held sixteen meetings with an average attendance of ten regular members. Sixty-four papers had been read, an average of four papers each meeting. Tables were compiled showing the attendance of each member, the contributions furnished and his financial standing with the association, and the conclusions were that as a rule the members who supported the society by their attendance were the ones who provided the papers, contributed the discussions and paid the bills. Eight dollars and ninety-five cents were reported in the treasury.

A great number of communications were read from members and others who were unable to attend the meeting.

A telegram from Dr. Verschelden announced his detention at the last minute and rendered it impossible for him to attend the meeting.

The election of officers for the ensuing year resulted as follows: S. E. Bennett, President; R. C. Moore, First Vice-President; J. C. Milnes, Second Vice-President; W. A. Heck, Secretary and Treasurer; J. C. Milnes, S. Stewart, B. F. Kaupp, J. H. Cock, L. D. Ryan, Board of Censors.

Dr. Ryan read a paper on "Tetanus," which brought out a very great amount of discussion.

Dr. Moore read a paper on "Methods of Generating and Administering Steam to Horses in Indicated Affections."

The lateness of the hour prevented a discussion of this paper, and Dr. Stewart moved a vote of thanks to the essayists, which was carried. Adjourned. W. A. HECK, *Sec'y and Treas.*

OHIO STATE VETERINARY ASSOCIATION.

The semi-annual meeting of this association will be held in Toledo on Monday and Tuesday, July 11 and 12. As the

Toledo veterinarians are well known for their hospitality, a jolly good time is being arranged for. A carriage ride about the city or a good lake ride, an evening's entertainment at the Euclid Park Theatre, and a banquet. All graduate veterinarians are invited, and are especially invoked to bring their wives or their sweethearts with them.

W. H. GRIBBLE, D. V. S., *Secretary.*

NEWS AND ITEMS.

"CANINE OTORRHŒA" will be the title of the next article from the pen of Dr. Frank H. Miller, for the REVIEW.

DR. N. S. MAYO, of Storrs, Conn., expects to attend the Omaha meeting of the U. S. V. M. A.

DR. L. A. MERILLAT, of Chicago, examined 800 cavalry horses in one week for the Government.

DR. W. W. JOHNSON has recently been added to the inspection force at St. Joseph, Mo.

DR. J. H. MCLEVEY, Warrensburg, Mo., spent several weeks among friends and relatives in Canada this spring.

DR. H. M. BURGESS, of Boston, is in the service of the Bureau of Animal Industry at St. Joseph, Mo.

VETERINARIAN JOHN T. LEE, of Tacoma, Washington, is President of the State Board of Health.

PROF. JAMES M. WRIGHT, of the McKillip Veterinary College, Chicago, has been appointed comparative pathologist to the Chicago Academy of Science.

MR. J. PRESTON HOSKINS, brother of our esteemed colleague, Dr. W. Horace Hoskins, has recently been elected assistant professor of German at Princeton College.

GALTEE MORE, the Irish thoroughbred stallion, winner of last year's English Derby, was recently sold to the Russian government for $100,000.

QUITE a number of the horses bought by the government and taken to Southern camps have died of acclimation fever and complications.

THREE HUNDRED AND TWENTY HORSES were purchased in one day in Chicago by the government inspectors for army service.

THE VETERINARIANS OF THE WEST are reporting an im-

provement in their business, due to the appreciation in horses and other live stock.

DR. W. N. D. BIRD, of the Bureau Animal Industry, at Arkansas City, Kansas, has been granted a short furlough. The doctor has been to his old home in Pennsylvania, and reports to have enjoyed his vacation immensely.

DR. J. P. TURNER, formerly veterinary surgeon, United States Army, has relinquished that position, and entered the service of the Bureau of Animal Industry, being assigned to duty as a meat inspector at St. Louis, Mo.

PERCY K. NICHOLS, D. V. S., of Port Richmond, Staten Island, N. Y., has been appointed veterinarian for the Borough of Richmond, New York City, his duties including the application of the tuberculin test to all cattle on the island.

DR. THOMAS JACKSON TURNER, formerly State Veterinarian of Missouri, now connected with the Bureau of Animal Industry, was married June 22d to Miss Ella Bates, of Kansas City, Mo. They will be at home in Indianapolis, Ind., after July 15.

STRIKES THE NAIL SQUARELY ON THE HEAD.—" . . . I will also write all our members in reference to the REVIEW, for we do not do our duty by such a magazine, which every veterinarian should have at hand."—(*Secretary Leading Western Association.*)

THE May issue of the *Journal of Comparative Medicine* was devoted largely to affairs veterinary in New York State, page after page being devoted to pleasant personalities of various members of the profession in that Commonwealth. The majority of the items bore the earmarks of Editor Gill.

DR. WILLIAM HENRY KELLY, of Albany, N. Y., Secretary of the State Board of Veterinary Examiners, and the very efficient Legislative Committeeman of the State Society, deserted the ranks of bachelordom the latter part of April and married Miss Sparrow, of the same city. We wish him every pleasure that can come to the charmed sphere of the benedict veterinarian.

NO ADVANCE IN SPRATT'S FOODS.—The advance in wheat, and consequently flour, have seriously affected all industries making use of breadstuffs. Most of them have advanced their price lists. Spratts Patent have not advanced the price of their dog cakes and other foods. They had made favorable purchases of flour for future delivery, and though they have, of

course, felt the high prices to a certain extent, they have resolved not to make their customers suffer for it as long as they can hold out.

A PROGRESSIVE VETERINARIAN.—Dr. S. R. Howard can now boast of almost as many titles as the Prince of Wales. It is now proper, when addressing a letter to him, to put on the following: "S. R. Howard, V. S., M. B. H., M. C., H. O." That his friends may know what all this means, we will furnish the following key to his titles: V. S., Veterinary Surgeon; M. B. H., Member of the Board of Health; M. C., Member of Council; H. O., Health Officer. He was appointed a member of the Board of Health by Mayor Wilkins, and the Board at a recent meeting elected him to be Health Officer in the place of Dr. Hoyt, M. D.—(*Hillsboro Gazette*, *Hillsboro*, *O.*, *June* 3.)

SALTPETRE POISONING.—*To the Breeder's Gazette.*—The subjoined news note, taken from the first issue of the *North British Agriculturist* of Edinburgh, Scotland, is of interest in connection with the article headed "Deadly Cornstalks" in last week's issue: "Mr. George Lethardy, farmer, Millbank, Lockerbie, has lost a couple of Ayrshire cows by an overdose of saltpeter. Mr. Lethardy had ordered a quantity of salts from a grocer in Lockerbie, and under the belief that he had received what was ordered administered a dose of one pound to each of the cows. Shortly afterward they showed symptoms of suffering and died. Mr. Lethardy being uncertain as to the cause of death had a quantity of the physic submitted to a veterinary surgeon and a chemist, who had no difficulty in pronouncing it to be saltpeter." As it has been found that eight ounces of saltpeter (one half pound) are sufficient to produce fatal results it can be readily understood that where saltpeter forms 25 per cent. in weight of fodder badly affected by the salt, cattle eating such fodder must consume a much larger amount than the one noted above. A. S. ALEXANDER, V. S., Cook Co., Ill.

COMPETENT VETERINARIANS FOR THE ARMY.—There is a movement afoot to have the laws governing the enlistment of veterinary surgeons in the army amended so as to bring into the service highly-educated men. At present it is impossible for a veterinary surgeon to obtain a rank higher than color sergeant. The law was made years ago when a scientific education was not considered essential to qualify a man as "horse doctor." The veterinary associations have sent memorials here directing attention to the necessity for getting thoroughly competent

veterinary surgeons in the army, and suggesting that when inducements are offered qualified graduates will present themselves. It is probable that not half a dozen of the veterinary surgeons in the army to-day can correctly state the rations a horse should have to prepare him for certain work. In the British army the conditions are different. There the veterinarians are given ranks that induce competent men to enter the service. Col. Fleming of the British army, a full colonel and a C. B., is a veterinary surgeon. The necessity of having competent veterinarians in the United States' service at this time is emphasized by the danger of epidemics among the horses which are obtained from all parts of the United States and intended for service in Cuba. While it is true the purchasing agents can tell whether a horse is well or sick they are not qualified as a veterinary surgeon would be to discover weaknesses and faults which will be developed by a little service in the field. The day of the "horse doctor" has passed, and that fact should be recognized by army regulations as it is elsewhere. What the army badly needs is a corps of veterinary surgeons, men who have given as painstaking care to educate themselves in their professions as doctors of medicine do in theirs, and they can only be induced to enter the army by giving them a chance to get a commission.—(*Breeder's Gazette, May 18.*)

CHICAGO VETERINARY COLLEGE COMMENCEMENT.—The fifteenth session of the Chicago Veterinary College terminated with appropriate exercises on March 23d at two o'clock in the college auditorium. The degree of Doctor of Comparative Medicine was conferred on the following gentlemen: Geo. E. Totten, Bement, Ill.; O. O. Wolf, Ottawa, Kas.; Wm. A. Withers, New Orleans, La.; C. G. Warner, Aurora, Ill.; Jas. M. O'Reilley, Merrill, Wis.; Jas. L. Kling, McGrawsville, Ind.; D. A. Piatt, Lexington, Ky. The trustees' gold medal for highest general average in final examinations was awarded to Dr. G. E. Totten. The prize in theory and practice was awarded to Dr. O. O. Wolf. The prize in anatomy not having been won by a senior was carried over to next year. The class valedictory was delivered by Dr. O. O. Wolf, and the doctorate by Prof. A. H. Baker. The address of the professor was replete with good advice to the young doctors, giving them some valuable hints as to how to successfully conduct a practice, how to advantageously give expert testimony in court, and dwelt at length on the necessity of sobriety and industry in order to maintain a respectable position in society, to read the profes-

sional journals, join their local, State and national associations, thereby giving themselves a chance to profit by the investigations, observations and experience of older members of the profession and wear off the diffidence and narrowmindedness that always results from non-intercourse with others. He said by way of explanation of the smallness of the graduating class that this was the connecting link between the two- and three-year courses, and under ordinary circumstances there would be no graduating class this year, but on account of allowances for former attendance and attendance at other veterinary colleges there were the few mentioned above, and that what they lacked in numbers they made up in quality, most of them having passed in the honor class, and that the C. V. C. expected to add materially to her reputation through the class of 1898.

NOTES FROM THE HAWAIIAN ISLANDS.—From private letters of Dr. W. T. Monserrat, veterinarian to the Honolulu Board of Health, the following extracts are taken: "I would like to amend your article in the April REVIEW on liver flukes in cattle on these islands by saying that all the cattle reported on were slaughtered under my inspection. It is the only place where veterinary inspection is held, I am sorry to say; in time I presume we will have inspection wherever cattle are slaughtered. The cattle from the other islands are brought here by steamers in lots of 25 to 50. I send you a photo of the methods used in putting cattle aboard of these steamers; the landings are very rough, and cattle are handled in a very crude manner; under the circumstances nothing else can be done. . . . The cattle here are being worried to a great extent by a fly, which some call the 'horn fly.' I have never see anything like it before. I send you some of them by this mail. It is about two-thirds the size of the house fly. They gather on the shoulders of the cattle in swarms and hang on firmly, and I am told they have killed quite a number of cattle on the other side of the island, boring great holes in their necks, and worrying the cattle to death. You may be familiar with this fly; so if you can suggest any means of exterminating them let us know. [Correspondent was referred to the U. S. Bureau of Animal Industry.] . . . I received the 'Blue Book,' and am very much pleased with it. . . Our Veterinary Bill has passed the House and is now before the Senate, having been referred to the Committee on Health after its second reading. I hardly think it will pass the third reading; and then all it will need will be the signature of the President. We have made some changes in it, and

have placed in it a board of examiners (consisting of two veterinarians and one physician). All non-graduates will have to pass an examination. Graduates of recognized colleges will only have to register. This change was made on account of a number of non-graduates who have been practicing here for the past five years and over, and who can no more pass an examination than they can fly. We came to the conclusion that it would be best to insert this clause and let the bill take its chances. If it doesn't succeed this session, we will try again next year. . . . We are very much worked up over the war, and the city of Honolulu is hung with bunting from end to end. The U. S. S. Charleston arrived *en route* to Manila last Sunday and was given a welcome that stirred the hearts of her officers and seamen. A grand welcome awaits the transport ships, one of which will arrive to-night or in the morning (the City of Peking), and the 'Boys in Blue' will think they have struck some town in the United States. Some $8000 has been subscribed to entertain the troops as they pass through here. We 'Remember the Maine.' "

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